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THE ELECTROMAGNETIC-RADIATION ENVIRONMENT OF A SATELLITE

PART II. RADIO WAVES

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PART II. RADIO WAVES*

By Jerry L. Modisette

SUMMARY

This paper is a compilation of the available information on electromagnetic radiation at radio wavelengths incident on the Earth. Radio waves from the Sun, Moon, and planets and the background radiation from the sky are discussed. A table of the intensities and celestial coordinates of the 2,000 most intense discrete sources (radio stars) is given, together with maps of the brightness temperature of the sky at frequencies of 64 to 910 megacycles per second.

INTRODUCTION

The present paper is a review of the long-wavelength (radio) electromagnetic radiation received from the Sun, the planets, and the Galaxy. With regard to artificial satellites, or space vehicles in general, this radiation is mainly important with regard to interference with communications. However, the material has been presented without special emphasis on those wavelengths that are presently used in communications.

Since Jansky's discovery of radio waves from the constellation of Sagittarius in 1933 (refs. 1 to 3), cosmic radio waves have been observed at most wavelengths from the millimeter range up into the broadcast band. The principal sources have been found to be the Sun, other discrete radio sources or "radio stars" scattered over the sky, and the cosmic background radiation which is concentrated around the galactic equator and which reaches its maximum intensity in the direction of the center of the Galaxy.

There are several features of cosmic radio waves which are not found in the optical range of the electromagnetic spectrum. These consist both of properties of the radiation itself and of characteristics of the sources. With one exception, the spectral distribution of cosmic radio waves is continuous. This exception is the spectral line at 21 centimeters produced by a hyperfine transition of atomic hydrogen.

*Part I. Range of Thermal to X-Radiation, by S. Katzoff, is NASA Technical Note D-1360.

A curious characteristic of the Sun as a source is its relation to the rest of the sources. The Sun is the source of most radiation of wavelengths between those of infrared and gamma rays - at optical wavelengths it is 10^8 times as intense as the rest of the sky. For radio waves, however, the undisturbed Sun is no stronger than many other celestial sources, and when compared to the background radiation coming from the sky the undisturbed Sun amounts to only one ten-thousandth of the total radiation at a wavelength of 15 meters. (See ref. 4.) As the wavelength of the radio waves decreases, the sky diminishes in importance until at around 10 centimeters the intensity is below the threshold of detection. At these wavelengths the Sun becomes the most important source.

Although the undisturbed or "quiet" Sun is relatively unimportant at longer wavelengths, the intensity is subject to fluctuations which may bring about increases by factors of as much as 10^7 . This variation has not been observed in the radiation coming from the rest of the sky, so that during a solar fluctuation or "burst" the Sun accounts for most of the radio-frequency-radiation incident on the Earth.

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SOLAR RADIO WAVES

In speaking of solar radio waves, it is helpful to refer separately to the radiation emitted by the undisturbed or "quiet" Sun and the bursts of radiation associated with various types of solar disturbances. The differences in these two types of radiation lie in their variability and the magnitude of their intensities. The radiation from the quiet Sun varies less and is much less intense than that associated with bursts: Maxwell, Howard, and Garmire, in reference 5 report an increase of the quiet Sun's radiation by a factor of 2 as the sunspot cycle goes from minimum to maximum whereas the bursts may produce changes in intensity by factors of as much as 10^7 ; the quiet Sun is no more intense than several other discrete radio sources, but during a burst the Sun may become as much as a thousand times more intense than all the rest of the sky combined.

Quiet Sun

Observations of the brightness temperature of the quiet Sun at various wavelengths have been reported in references 6 to 16. The results of several of these observations are shown in figure 1 (refs. 5, 7, and 9 to 12). This temperature is somewhat misleading as it is computed from intensity measurements and is based on the assumption that all the radiation comes from a disk the size of the photosphere. The radiation, especially at longer wavelengths, actually comes from an area somewhat larger than the photosphere. For an antenna of low resolution compared

to the angle subtended by the photosphere or the corona, the brightness temperature is not as important as the radiation-flux incident on the antenna. Measurements of this radiation flux for various wavelengths are tabulated in table I (refs. 5, 7, 9, and 16). For antennas of high resolution the apparent temperature distribution of the solar disk and corona becomes significant.

Theoretical work done on the brightness distribution indicates that at wavelengths below 1 centimeter the Sun should appear as a constant temperature disk whose diameter equals that of the photosphere; from 1 centimeter to about 1 meter the apparent size of the disk should remain the same, but marked limb-brightening is predicted; at wavelengths above 1 meter the limb-brightening should disappear but the apparent size of the disk should increase until it is as much as twice the diameter of the photosphere. (See ref. 13.)

Measurements of the brightness distribution across the solar disk have been made at wavelengths of 60 centimeters (ref. 14), 3.68 meters (ref. 15) and more recently at 9.1 centimeters (ref. 16) and 21 centimeters (ref. 17). The limb-brightening predicted in reference 13 does not appear in the early work at 60 centimeters. However, the later work at 9.1 and 21 centimeters using highly directional antennas indicates that limb-brightening of the basic component is masked by radiation from strongly emitting regions associated with sunspots. After the effect of these regions was eliminated by analysis of the data, the limb-brightening appeared at 9.1 centimeters; whereas, the data at 21 centimeters were taken during a time when the Sun was free of sunspots and the limb-brightening appeared in the original data. It should be noted, however, that the limb-brightening appeared only on the east and west limbs in both cases. The data taken at 3.68 meters show the extension of the apparent disk diameter as predicted in reference 13. The results of the previously noted studies are shown in graphical form in figures 2 and 3.

The quiet Sun is considered as having two components, one of which, the basic component, remains relatively constant varying over the 11-year sunspot cycle. It is this component to which the distribution analysis in the preceding paragraph applies. The other component, the so-called slowly varying component, varies over a 27-day cycle corresponding to the synodic period of rotation of the Sun at the equator.

The 11-year variation of the basic component has been attributed by Van de Hulst (ref. 18) to a variation of the density of the solar corona over the sunspot cycle, which would in turn produce a variation in intensity at a wavelength of 50 centimeters of about 2 to 1. As mentioned before, according to Maxwell et al. in reference 5 this has been observed at wavelengths of 56, 76, 150, and 240 centimeters.

The slowly varying component appears to be related to the sunspots in that over any given short period of time the intensity of this component is roughly proportional to the sunspot area visible from the Earth. In addition, observations at 9.1 centimeters with a high-resolution antenna (ref. 16) show that the sunspots are actually strongly emitting regions. The variation in intensity results from the irregular distribution of sunspots over the surface of the Sun, which in turn produces a change in the sunspot area visible from the Earth as the Sun rotates. At sunspot maximum the average variation in intensity over the 27-day cycle is 100 percent, and at sunspot minimum this variation is 50 percent. It should be noted that for a given visible sunspot area, the random variation may be ± 50 percent. The slowly varying component only appears at wavelengths of 3 to 60 centimeters. This is attributed to the fact that the radiation in this range originates in the lower corona and chromosphere, where underlying sunspots cause local enhancement of the radiation.

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Disturbed Sun

Radiation from the disturbed Sun is noted for its intensity, variability, and, by those whose interest is solar physics, its apparently nonthermal origin. It is generally agreed that the radiation is caused by some physical disturbance which occurs in the solar atmosphere at altitudes responsible for the particular frequencies observed. This disturbance may remain fixed in one altitude range, or may move, in the one case causing radiation over a constant-frequency range, and in the other causing the frequency range to vary with time. The exact nature of the disturbances has not been decided; such mechanisms as spontaneous plasma oscillations, moving groups of particles, and shock waves have been proposed.

The radiation phenomena observed from the Earth have been classified into four distinct types according to the way the frequency range of the disturbance varies with time. Ninety-five percent of the observed disturbances fall into these classifications, which are listed and described as follows:

Noise storms.— Noise storms occur as two types, the wide-band type having bandwidths (frequency range) of about 100 mc/sec and lasting a few seconds, and the narrow-band type having bandwidths of 1 or 2 mc/sec and lasting from a fraction of a second to several minutes. Noise storms usually occur at frequencies below 250 mc/sec. The intensity ranges from being barely perceptible to as much as 1,000 times that of the quiet Sun. The radiation is usually circularly polarized with the sense being determined by the largest emitting sunspot such that right-handed polarization appears when the spot is a south (negative) magnetic pole, and left-handed polarization appears with spots which are north magnetic poles.

Slow-drift bursts.- The slow-drift bursts are bands of intense radiation which drift towards lower frequencies. The drift rate is of the order of 200 mc/sec per minute initially, slowing to about 50 mc/sec per minute toward the end of a burst, which usually lasts about 4 minutes. Slow-drift bursts usually begin at about 500 mc/sec, with a bandwidth of 200 mc/sec. The bandwidth remains at about 40 percent of the frequency throughout the burst. Slow-drift bursts are randomly polarized.

Fast-drift bursts.- In the case of fast-drift bursts the drift is also towards lower frequencies, but the drift rate is about 100 times that of the slow-drift bursts. These bursts may begin at any frequency from 50 to 600 mc/sec and are randomly polarized.

Enhanced continuum radiation.- Enhanced continuum radiation occurs over a bandwidth greater than 300 mc/sec and may drift towards either lower or higher frequencies or not at all. The frequency usually lies between 100 and 600 mc/sec. The intensity is about 10 times that of the quiet Sun.

Figure 4 shows the dynamic spectra of the previously discussed types of solar bursts. The 5 percent of the solar disturbances not included in the four classifications discussed may be of any form. They are usually short lived and isolated from other forms of solar activity such as flares or sunspots.

The frequency of occurrence of these classifications of radiation from the disturbed Sun is greatest during the maximum of the sunspot cycle. During the sunspot maximum of 1957-58, Maxwell et al. (ref. 5) made extensive measurements of solar radio disturbances at frequencies of 125, 200, 425, and 550 mc/sec. The total observing time during the period was 4,008 hours. The resulting distribution of the various types of solar disturbances is given in the following table:

Type of activity	Percentage of total observing time at frequencies of:			
	125 mc/sec	200 mc/sec	425 mc/sec	550 mc/sec
Noise storm	13.3	8.0	0.080	0.053
Slow-drift bursts	.047	.020	.003	.003
Fast-drift bursts	.247	.142	.023	.016
Continuum	.283	.524	.412	.512
Unclassified	.029	.008	.001	.001

In addition to the distribution of various types of disturbances, the distribution of intensities of all types of disturbances was determined and is as follows:

Intensity	Percentage of total observing time at frequencies of:			
	125 mc/sec	200 mc/sec	425 mc/sec	550 mc/sec
1	9.26 ± 0.57	5.59 ± 0.35	0.0570	0.0387
2	$2.00 \pm .12$	$1.17 \pm .07$.0096	.0066
3	$2.07 \pm .05$	$1.25 \pm .02$.0133	.0075

The relations between the three intensity designations and the actual fluxes at the various frequencies are:

Intensity	Flux range, watts - m^{-2} - $(c/sec)^{-1} \times 10^{22}$, at frequencies of:			
	125 mc/sec	200 mc/sec	425 mc/sec	550 mc/sec
1	<40	<60	<50	<50
2	40 to 200	60 to 250	50 to 200	50 to 200
3	>200	>250	>200	>200

Various observers have noted apparent coincidences of radio disturbances with optical phenomena such as flares, sunspots, and ejective prominences. For example, Erickson (ref. 19) observing at a frequency of 26.3 mc/sec during May 1959 observed a strongly emitting region to move from a position in the corona 4.5 solar radii from the center of the Sun, across the disk to a corresponding position on the other side. The movement was such as to indicate a rigid corona, radiating in one spot. On the third day of observation, a class 3+ flare was observed to occur at the location of the disturbance. The flux was 10×10^{-22} watts - m^{-2} - $(c/sec)^{-1}$ for 2 days before the flare, 30×10^{-22} watts - m^{-2} - $(c/sec)^{-1}$ for 3 days during and after the flare, dying out to 1×10^{-22} watts - m^{-2} - $(c/sec)^{-1}$ 8 days after the flare.

Maxwell et al. attempted to find correlations between the disturbances which were observed during the 1957-58 sunspot maximum, with the following results:

No correlation was found for ejective prominences, with few of them being associated with any type of burst at all.

The sunspots were definitely correlated with noise storms, in that all noise storms were associated with sunspot groups. However, not all sunspot groups had accompanying noise storms. The correlation seemed to depend upon the size of the sunspot group, with noise storms being improbable if the sunspot group covers less than 400 millionths of the solar disk, and probable if the group is larger than this. It has also been suggested by Payne-Scott and Little (ref. 20) that a correlation is obtained between the noise storm and the area of the largest spot in the group. This belief is supported by their observations at 97 mc/sec which showed that individual spots whose area is greater than 400 millionths of the solar disk are usually accompanied by noise storms, whereas smaller spots seldom had associated noise storms. The importance of the largest individual spot also appears in the polarization effect mentioned before; that is, the sense of the polarization is determined by the largest emitting spot.

Flares show no association with noise storms, according to the observations of Maxwell et al., but there were indications of a correlation of flares with slow-drift bursts and fast-drift bursts. One-half the slow-drift bursts and 30 percent of the fast-drift bursts were accompanied by flares, and all the flares having areas greater than 600 millionths of the solar disk were observed to have accompanying bursts.

A definite correlation was found by Maxwell et al. between flares and enhanced continuum radiation. All flares of class 1 or above were accompanied by enhanced continuum which tended to last longer with the larger flares. The average duration of the enhanced continuum associated with class 1 flares was 40 minutes; whereas, with class 2 and 3 flares, the average duration was 110 and 220 minutes, respectively. Of course these times are averages, and sometimes the duration is much longer, as in the example mentioned previously which was observed by Erickson.

DISCRETE SOURCES OF COSMIC RADIO WAVES

Scattered about the sky are many discrete sources of radio emission which are much stronger than the background radiation. In the past, these sources have been termed "radio stars" because when they were first discovered, their angular extent was less than the resolving power of the available instruments so that they appeared to be point sources. With the advent of better radio telescopes, it developed that most of

the stronger sources have appreciable angular extent, a result that has not been found for optical stars.

Discrete radio sources are divided into two types, class I and class II. The distinction is not based on intrinsic properties of the sources, but on their locations. Class I sources, also called galactic sources, are located within 10° of the galactic equator and are generally agreed to be sources distributed throughout the Galaxy. The class II sources are randomly distributed over the sky. It has been hypothesized that these sources are located close to the solar system and also that they are extragalactic objects, with the consensus of modern opinion favoring the latter.

A number of surveys have been made for the purpose of mapping the discrete sources, and have been reported in references 21 to 29. The total number of sources is probably over 5,000, although not all have been observed because not all the sky has been surveyed exhaustively. Table II is a catalogue of the positions and intensities of the sources which were observed and reported in references 21 to 29.

Nine radio-source surveys are included in table II. The surveys are numbered and referenced as follows:

Survey	Reference
1	21
2	22
3	23
4	24
5	26
6	29
7	27
8	28
9	25

Three of these surveys (5, 7, and 9) are comprehensive, generally considered to be exhaustive for the areas of the sky covered. However, in the case of survey 9, there is considerable doubt as to the accuracy of the positions due to confusion of sources arising from the use of a rather large beamwidth. Therefore, this survey has been used only for declinations not covered by surveys 5 or 7 (declinations greater than 71° ; declinations less than 22°). The other surveys are less exhaustive and are included principally to confirm positions of the stronger sources. In the table, repeated observations of the same source are given the same number and designated a, b, c, and so forth. The stated errors are the root-mean-square derivation of several determinations in the case of surveys 6, 7, and 9, and beamwidths to $1/2$ maximum in the other surveys.

COSMIC BACKGROUND RADIATION

In addition to the discrete sources, the entire sky exhibits radiation at radio wavelengths. This radiation, in fact, accounts for most of the energy flux incident on a surface in the vicinity of the Earth, except during solar bursts. As is the case of solar radiation, the brightness of the sky increases with increasing wavelength or decreasing frequency. The intensity of this background radiation varies over the sky, reaching its maximum in the direction of the galactic center.

A number of surveys have been made of the background radiation of the sky at various frequencies from 18 to 2,000 mc/sec. The first, covering the sky in the vicinity of the Milky Way, was reported by Reber (ref. 30) in 1944 at a frequency of 160 mc/sec. Other surveys have been made at 64 mc/sec (ref. 31), 81 mc/sec (ref. 32), 86 mc/sec (ref. 33), 100 mc/sec (ref. 34), 250 mc/sec (ref. 35), 480 mc/sec (ref. 36), 600 mc/sec (ref. 37), and 910 mc/sec (ref. 38). Ko (ref. 39) has assembled the previously mentioned surveys into a compilation of maps using the same coordinate system, scale, and projection representing the best available picture of the background radiation. These maps are reproduced in figure 5. None of these maps cover the north polar region, and with one exception none cover the south polar region. Westerhout (ref. 40) using observations at 400 mc/sec has prepared a map of the north polar cap which is reproduced in figure 6.

Figures 5 and 6 are reproduced in celestial coordinates, epoch 1950. According to reference 4, the approximate formulas for the yearly change due to precession of the Earth's axis are:

$$\Delta\alpha = 3.07 + 1.34 \sin \alpha \tan \delta$$

$$\Delta\delta = 20.0 \cos \alpha$$

where α and δ are the right ascension and declination, respectively; $\Delta\alpha$ and $\Delta\delta$ are the yearly changes in right ascension and declination, measured in seconds of time and seconds of arc, respectively.

The contours of figures 5 and 6 are isophotes, that is, lines of constant brightness. In figure 5 the width of the antenna beam to 1/2 power is shown. The accuracy of the isophotes is limited by the beamwidth. According to Ko, the absolute accuracy of the maps should be ± 50 percent or better, and the relative precision of isophotes on a single map should be better than ± 20 percent.

RADIO WAVES FROM THE MOON AND PLANETS

Lunar Radiation

There are in principle two sources of lunar radiation: thermal radiation and radiation from other sources which is reflected by the Moon's surface. The thermal radiation has been measured by Piddington and Minnett (ref. 41) and their result for the brightness temperature is:

$$T = 239 + 40.3 \cos \left(\omega t - \frac{1}{4} \pi \right)$$

where

T temperature, °K

t elapsed time since full Moon, days

ω angular velocity of Moon about Earth (0.23 radian/day)

The brightness temperature given is the mean disk temperature. Coates (ref. 42) measured the brightness-temperature distribution at a wavelength of 4.3 millimeters. He concluded that, in general, the maria heat and cool more rapidly than the mountains, with the exception of Mare Imbrium, which always remains cooler.

Measurements of radio waves reflected by the Moon were not found in the literature, except for radar reflections originating on the Earth. This does not indicate that no such reflections exist, since there were also no reports of unsuccessful attempts to find them. Also, these reflections would be most likely to appear at full Moon during solar bursts. The strength of the reflected bursts would be dependent upon the intensity of the radiation incident upon the lunar surface, and upon the efficiency of the Moon as a scatterer or reflector of radiation. Senior and Siegel (ref. 43) give a compilation of scattering cross sections as determined by various observers from radar reflections. These values are tabulated as follows:

λ , meter	Scattering cross section, percent of lunar disk area
0.6	3
0.7	7
1.0	5 to 9
1.5	6 to 10
2.5	10

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Since these values of the scattering cross sections are determined by the reflection of radar waves originating on the Earth, they can be strictly applied only to reflection from the Sun when the Earth lies between the Sun and the Moon, that is, at full Moon. For application at any other time, a correction factor must be applied to account for the fraction of the visible disk which is illuminated, and for the difference in reflection characteristics, which is not known at present.

With use of data from reference 5, the intensity of the reflected radiation during a solar burst can be calculated. At a wavelength of 1.5 meters, a typical intensity is 2.5×10^{-20} watts - m^{-2} - $(c/sec)^{-1}$. A scattering cross section of 10 percent of the lunar disk area gives a total reflected flux of 2.4×10^{-8} watts - $(c/sec)^{-1}$. At the distance of the Earth from the Moon, this gives a flux density of 5×10^{-26} watts - m^{-2} - $(c/sec)^{-1}$, about the same as one of the weakest "radio stars."

Planetary Radiation

Planetary radiation is generally classed as thermal and nonthermal. Thermal radiation is nonfluctuating and is presumed to actually be thermal radiation from the surface or atmosphere of the planet. It is usually strong enough to be detectable only at very short wavelengths (<1 meter). Thermal radiation has been observed for Mars, Jupiter, and Venus (refs. 44 to 52). The results of the various observations are given in table III.

At longer wavelengths than those listed in table III, several observers have noted incongruously high disk temperatures for Jupiter (refs. 53 to 56). The observed disk temperatures were:

Wavelength, λ , meter	Disk temperature, T_d , $^{\circ}K$	Reference
0.208	1,000 to 4,700	56
.214	$3,500 \pm 1,700$	53
.31	3,800 to 6,400	55
.68	$70,000 \pm 30,000$	53

Roberts and Stanley in reference 55 hypothesize that likely sources of this anomalous radiation are free-free transitions of electrons in the Jovian corona or else synchrotron radiation from Van Allen belts. It was noted by Epstein (ref. 53) that the radiation varies by as much as a factor of 2 over a few hours observing time.

In addition to the anomalous radiation in the decimeter range mentioned in the previous paragraph, highly fluctuating radiation has been observed from Jupiter at frequencies of 14 to 43 mc/sec (wavelengths of 21 to 6.9 meters). (See refs. 56 to 63.) The initial discovery was made by Burke and Franklin (ref. 56) in 1955. Subsequent observations have revealed several pertinent characteristics of the radiation. It is almost completely circularly polarized, it shows a periodicity of 9 hours, 55 minutes, and 28.8 seconds during active periods (ref. 57), and it appears to be localized on the surface of the planet (ref. 58). It may be that the radiation exists at frequencies below 14 mc/sec but is so strongly attenuated by the Earth's atmosphere that detection is impossible. Attempts have been made to observe this radiation at higher frequencies without success (ref. 59). Even in the range of 14 to 43 mc/sec the radiation is not always present. According to reference 60 several days may pass during which no nonthermal radiation is detected.

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The peak intensity of the radiation is given by various observers as 10^{-21} watts - m^{-2} - $(c/sec)^{-1}$ at 21.1 mc/sec (ref. 61), 2.5×10^{-21} watts - m^{-2} - $(c/sec)^{-1}$ at 27 mc/sec (ref. 57), and 8.5×10^{-20} watts - m^{-2} - $(c/sec)^{-1}$ at 18 mc/sec (ref. 58).

Kraus in reference 62 reports bursts of nonthermal radiation from Venus at 26.7 mc/sec. The peak intensity was 8.9×10^{-22} watts - m^{-2} - $(c/sec)^{-1}$. In reference 63, Kraus reports a 13-day periodicity to the radiation which he attributes to the "beat" frequency between the 24-hour rotation period of the Earth and the 22-hour, 17-minute rotation period of Venus. No other observers have reported nonthermal radiation from Venus.

Smith and Douglas in reference 61 report the possibility of non-thermal radiation from Saturn. Interference from terrestrial sources was such that positive identification could not be made, however.

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TABLE I.- RADIANT ENERGY FLUX FROM THE QUIET SUN

Wavelength, λ , meter	Frequency, ν , mc/sec	Intensity, I , watts - m^{-2} - $(c/sec)^{-1}$	Reference
0.0085	35,300	17.7×10^{-20}	9
.0125	24,000	12.0	7
.03	10,000	3.1	5
.075	4,000	2.3	5
.091	3,300	^a .94 (1960 SS max)	16
.091	3,300	^a .70 (1954 SS min)	16
.15	2,000	1.4	5
.3	1,000	.7	5
.546	550	.4	5
.706	425	.3	5
1.0	300	.2	5
1.5	200	.13	5
2.4	125	.06	5
3.0	100	.04	5
6.0	50	.02	5
12.0	25	.003	5

^aOnly the basic component. All other values include the slowly varying component.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES

(a) Northern hemisphere

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a					Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min		
1	7	159	00 02 19	± 4	17 01	± 7	(8.0 \pm 2.0) $\times 10^{-26}$	
2	6	960	00 02 35	± 30	72 04.5	± 4	12.9 \pm 1.5	
3	5	86	00 04 54	± 18	06 05	± 8	35	
4	7	159	00 07 45	± 8	32 46	± 5	10.5 \pm 2.0	
5a	5	86	00 10 12	± 12	00 37	± 5	20	
5b	7	159	00 10 45	± 04	00 47	± 10	8.0 \pm 2.5	
6	7	159	00 10 51	± 10	30 05	± 3	16.5 \pm 2.5	
7	5	86	00 14 12	± 18	06 48	± 7	18	
8	5	86	00 16 00	± 24	08 20	± 8	11	
9	7	159	00 17 50	± 5	15 23	± 8	15.5 \pm 2.5	
10a	4	159	00 22 00	± 20	64 15	± 35	170	
10b	7	159	00 22 37	± 2	63 52	± 2	110 \pm 17	
10c	6	960	00 22 45.7	± 3	63 51.4	± 1	57 \pm 3	
11	5	86	00 24 48	± 24	07 28	± 6	11	
12	7	159	00 26 35	± 4	20 54	± 6	10.5 \pm 3.5	
13	5	86	00 30 00	± 36	01 40	± 10	68	
14	7	159	00 30 06	± 4	19 43	± 6	9.5 \pm 1.5	
15	5	86	00 30 48	± 18	05 53	± 5	25	
16	7	159	00 31 35	± 5	39 03	± 4	12.0 \pm 3.0	
17	5	86	00 32 06	± 24	04 28	± 6	16	
18	7	159	00 33 35	± 3	18 25	± 7	13.5 \pm 2.0	
19	5	86	00 34 12	± 18	00 12	± 6	15	
20	7	159	00 35 52	± 6	12 50	± 16	10.5 \pm 2.0	
21	5	86	00 36 42	± 24	03 35	± 6	14	
22a	5	86	00 37 16	± 12	09 30	± 5	37	
22b	7	159	00 37 30	± 5	09 54	± 7	16.5 \pm 4.5	
23	7	159	00 38 14	± 6	32 54	± 4	13.0 \pm 2.5	
24	5	86	00 40 06	± 18	06 53	± 7	14	
25a	4	159	00 40 15	± 30	40 50	± 20	160	
26	5	86	00 40 36	± 16	02 20	± 8	7	
27	7	159	00 41 34	± 4	51 49	± 3	30 \pm 10	
27b	2	81	00 42 36	± 360	38	± 300	40	
28	5	86	00 42 36	± 16	05 26	± 7	19	
29	7	159	00 44 47	± 5	20 24	± 3	10.0 \pm 2.0	
30	7	159	00 48 09	± 2	50 51	± 5	13.5 \pm 2.5	
31	9	81.5	00 49 16	± 20	76 24	± 15	24	
32	7	159	00 49 53	± 5	17 51	± 6	16.0 \pm 2.5	
33	6	960	00 50 05	± 12	56 20.4	± 1.5	15.6 \pm 1.2	
34	7	159	00 50 39	± 5	40 12	± 5	9.5 \pm 1.5	
35	7	159	00 50 44	± 5	67 08	± 10	8 \pm 3	
36	7	159	00 52 42	± 3	68 13	± 10	22 \pm 5	
37	7	159	00 53 09	± 6	26 08	± 10	19.5 \pm 3.5	
38	3	101	00 55	± 960	24	± 90	50	
39	3	101	00 55	± 80	11	± 40	150	
40	5	86	00 55 18	± 18	01 14	± 6	16	
41	5	86	00 55 30	± 24	08 47	± 8	14	
42	5	86	00 59 48	± 18	04 52	± 6	19	
43	3	101	01 00	± 80	52	± 40	50	
44	7	159	01 00 08	± 6	14 25	± 7	14.5 \pm 3.5	
45	7	159	01 03 53	± 7	32 11	± 9	10.5 \pm 2.0	
46	3	101	01 05	± 80	30	± 40	100	
47	8	169	01 06 04.5	± 1	13 01	± 20	30	
48	7	159	01 06 13	± 3	13 05	± 9	58 \pm 6	
49	7	159	01 07 31	± 2	31 24	± 4	12.5 \pm 2.5	
50	7	159	01 08 50	± 3	47 05	± 6	9.0 \pm 2.5	
51	2	81	01 09	± 160	43 15	± 60	45	
52	5	86	01 14 54	± 18	06 05	± 6	11	
53	7	159	01 15 14	± 5	45 23	± 6	8.0 \pm 1.5	
54	5	86	01 16 18	± 12	08 11	± 6	14	
55	5	86	01 17 18	± 24	03 20	± 5	33	
56	7	159	01 20 00	± 4	03 39	± 15	9.5 \pm 3.0	
57	5	86	01 23 06	± 18	01 22	± 5	20	
58	7	159	01 23 54	± 5	32 50	± 6	8.5 \pm 2.0	
59	5	86	01 24 24	± 18	09 13	± 7	16	
60a	7	159	01 24 53	± 7	28 48	± 4	12.0 \pm 2.0	
60b	2	81	01 25	± 300	30	± 180	80	
61	9	81.5	01 25 21	± 20	71 52	± 30	39	
62	7	159	01 27 14	± 5	23 18	± 9	16.5 \pm 2.5	
63	7	159	01 27 52	± 3	03 14	± 10	8.0 \pm 2.5	
64	5	86	01 28 42	± 12	03 52	± 6	18	
65	5	86	01 29 12	± 12	06 07	± 5	23	
66	7	159	01 33 25	± 7	08 14	± 10	9.0 \pm 1.5	
67	5	86	01 33 30	± 24	07 53	± 6	15	

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts \cdot m ⁻² \cdot (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
68	7	159	01 55 35	± 5	57 41	± 6	$(12.5 \pm 3.0) \times 10^{-26}$
69	7	159	01 55 42	± 5	20 42	± 3	27 ± 5
70	7	159	01 54 51	± 5	32 55	± 4	50 ± 11
71	5	86	01 54 54	± 24	06 34	± 8	7.4
72	7	159	01 58 32	± 5	13 48	± 7	10.0 ± 2.0
73	9	81.5	01 58 51	± 20	78 57	± 20	22
74	7	159	01 41 11	± 7	51 18	± 6	8.0 ± 1.5
75	7	159	01 42 36	± 4	38 43	± 6	8.0 ± 1.5
76	5	86	01 43 00	± 18	02 01	± 6	9.4
77	5	86	01 46 12	± 18	06 10	± 8	19
78	7	159	01 47 02	± 7	55 19	± 5	9.5 ± 1.5
79	5	86	01 47 12	± 18	07 07	± 6	19
80	5	86	01 52 06	± 24	03 32	± 6	49
81	7	159	01 52 25	± 3	43 23	± 5	11.5 ± 2.0
82	7	159	01 54 19	± 2	28 34	± 4	17.5 ± 3.5
83	5	86	01 57 24	± 8	01 10	± 6	16
84	7	159	01 58 38	± 6	46 02	± 7	10.0 ± 2.0
	9	81.5	02 00 11	± 120	79 35	± 30	30
85	7	159	02 01 41	± 2	64 38	± 15	13 ± 3
86	5	86	02 02 18	± 24	04 20	± 8	10
87	7	159	02 03 15	± 6	26 55	± 6	8.5 ± 2.5
88	5	86	02 07 24	± 12	09 35	± 8	23
89	7	159	02 08 27	± 4	21 04	± 6	9.5 ± 2.5
90	7	159	02 10 58	± 9	17 18	± 7	8.5 ± 1.5
91	5	86	02 11 00	± 12	02 58	± 5	24
92	5	86	02 12 30	± 30	06 11	± 8	14
93	5	81	02 16 15	± 180	44 15	± 2	60
94	4	159	02 16 00	± 90	62 50	± 45	80
95	4	159	02 18 00	± 240	42 00	± 60	10
96	4	159	02 18 00	± 120	43 00	± 60	25
97a	7	159	02 19 21	± 4	08 19	± 5	11.5 ± 2.5
97b	5	86	02 19 24	± 12	08 08	± 6	24
98	7	159	02 19 42	± 4	39 46	± 3	18.5 ± 3.0
99	7	159	02 20 15	± 5	42 51	± 5	28 ± 7
100	7	159	02 22 14	± 3	29 54	± 9	10.0 ± 2.0
101	2	81	02 25 07	± 180	35 30	± 120	50
	9	81	02 26 07	± 15	77 43	± 15	45
102	5	86	02 26 12	± 18	02 35	± 7	9.0
	9	81	02 33 35	± 15	72 09	± 15	34
103	7	159	02 34 20	± 3	58 59	± 3	23 ± 2
104	5	86	02 35 42	± 18	07 01	± 8	10
105	7	159	02 40 43	± 8	26 44	± 5	10.0 ± 2.5
106	2	81	02 45 01	± 180	45 15	± 45	40
	9	81	02 47 01	± 20	77 15	± 20	22
107	7	159	02 47 08	± 7	39 17	± 4	12.0 ± 2.0
108	5	86	02 50 24	± 24	01 19	± 6	10
109	7	159	02 51 03	± 6	19 49	± 7	8.5 ± 2.5
110	5	86	02 53 24	± 18	06 48	± 7	11
111	7	159	02 54 27	± 4	06 05	± 4	38 ± 10
112	5	86	02 55 06	± 6	05 53	± 4	51
	9	81	02 57 10	± 20	76 26	± 20	20
113	5	86	02 58 54	± 18	01 35	± 5	27
114	7	159	02 59 10	± 5	50 44	± 6	8.5 ± 1.5
115	5	86	03 00 12	± 18	07 20	± 6	18
116	5	86	03 00 54	± 18	09 37	± 6	13
117	7	159	03 03 41	± 5	49 55	± 6	8.0 ± 1.5
118	7	159	03 05 57	± 4	04 09	± 6	17.0 ± 5.0
119	5	86	03 05 24	± 12	03 50	± 5	34
120	7	159	03 07 13	± 3	16 55	± 3	34 ± 5
121	7	159	03 08 45	± 5	48 30	± 5	9.5 ± 2.0
122	7	159	03 09 13	± 3	40 54	± 4	15.0 ± 2.5
123	5	86	03 09 12	± 24	05 11	± 8	10
124a	3	101	03 10 27	± 240	42 24	± 20	240
125	7	159	03 10 27	± 10	26 24	± 10	14.0 ± 3.5
124b	2	81	03 12 27	± 180	43 45	± 30	95
124c	4	159	03 15 15	± 90	41 22	± 30	65
126	6	960	03 16 22	± 15	16 18.5	± 4	9.0 ± 0.9
124d	7	159	03 16 29	± 3	41 17	± 2	50 ± 7
127	7	159	03 19 30	± 5	17 15	± 8	8.5 ± 1.5
128a	7	159	03 23 36	± 3	55 07	± 9	19 ± 4
129	7	159	03 23 41	± 3	43 50	± 5	9.5 ± 2.0
128b	4	159	03 24 30	± 180	55 05	± 60	60
130a	5	86	03 25 12	± 18	02 25	± 5	41
130b	7	159	03 25 15	± 3	02 07	± 9	9.0 ± 2.0
131	7	159	03 32 56	± 5	13 01	± 10	9.0 ± 2.0
132	5	86	03 34 06	± 24	09 51	± 7	24
133	7	159	03 34 20	± 2	50 51	± 7	14.0 ± 3.0

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
134	7	159	03 35 15	± 2	29 46	± 5	$(11.0 \pm 2.0) \times 10^{-26}$
135	5	86	03 35 48	± 24	07 40	± 7	13
136	9	81	03 38 21	± 20	72 41	± 10	45
137a	7	159	03 40 11	± 4	05 02	± 10	11.5 ± 2.5
137b	5	86	03 40 30	± 18	04 55	± 5	35
138	3	101	03 45	± 480	21	± 40	100
139	5	86	03 45 36	± 18	00 41	± 5	15
140	5	86	03 46 36	± 18	05 42	± 6	15
141	2	81	03 50	± 20	75	± 60	140
142	5	86	03 51 24	± 24	03 58	± 6	16
143	7	159	03 55 28	± 6	14 38	± 8	9.0 ± 3.0
144	7	159	03 55 43	± 4	48 56	± 5	10.0 ± 2.0
145	7	159	03 56 14	± 3	10 24	± 5	41 ± 9
146	9	81	03 57 58	± 15	71 19	± 10	47
147	2	81	03 58	± 90	41	± 90	45
148a	5	86	03 58 12	± 12	00 27	± 5	19
148b	7	159	03 58 30	± 4	00 17	± 7	14.5 ± 3.5
149	7	159	03 59 58	± 3	16 34	± 10	9.0 ± 2.0
150	5	86	04 00 00	± 18	05 35	± 8	13
151	5	86	04 00 06	± 18	02 21	± 5	11
152	7	159	04 04 38	± 4	42 53	± 4	29 ± 6
153	7	159	04 04 41	± 3	33 56	± 8	9.0 ± 3.5
154a	5	86	04 04 42	± 12	03 45	± 4	37
154b	7	159	04 04 48	± 2	03 35	± 7	12.5 ± 5.0
155	4	159	04 06 00	± 300	48 00	± 120	550
156	7	159	04 06 41	± 6	07 07	± 9	8.0 ± 2.0
157	2	81	04 10	± 120	35 45	± 30	105
158	7	159	04 10 32	± 6	24 59	± 5	10.0 ± 2.5
159	7	159	04 10 55	± 3	11 15	± 4	19.5 ± 3.0
160	5	86	04 11 54	± 24	05 43	± 7	8.6
161	9	81	04 14 31	± 15	76 56	± 60	52
162a	8	169	04 14 45	± 4	38 00	± 30	141
162b	7	159	04 15 05	± 2	37 50	± 4	60 ± 15
163	7	159	04 17 43	± 4	10 57	± 9	9.5 ± 2.5
164	7	159	04 18 17	± 5	17 43	± 12	12.5 ± 3.0
165	7	159	04 18 54	± 7	34 44	± 6	9.5 ± 2.0
166	7	159	04 20 25	± 3	30 06	± 4	12.5 ± 2.0
167	7	159	04 20 53	± 5	40 44	± 5	11.0 ± 2.0
168	5	86	04 21 54	± 24	00 24	± 8	14
169	5	86	04 23 12	± 24	04 26	± 6	13
170	2	81	04 26	± 60	25	± 120	330
171a	7	159	04 28 32	± 3	00 54	± 12	8.5 ± 2.0
171b	5	86	04 28 48	± 12	01 02	± 5	20
172	7	159	04 29 08	± 3	41 26	± 4	14.5 ± 2.5
173	7	159	04 29 32	± 4	01 55	± 8	11.5 ± 2.5
174	3	101	04 30	± 480	31	± 40	300
175	7	159	04 31 52	± 4	50 55	± 6	8.5 ± 1.5
176	5	86	04 32 48	± 12	03 57	± 5	25
177a	8	169	04 33 50	± 2	29 15	± 10	125
177b	7	159	04 33 55	± 4	29 35	± 2	204 ± 32
178	9	81	04 37 46	± 15	72 15	± 6	28
177c	1	100	04 38	± 28	28	± 300	300
179	5	86	04 38 12	± 30	07 05	± 8	8
180	7	159	04 41 45	± 4	37 27	± 4	12.5 ± 2.0
181	5	86	04 41 48	± 18	02 15	± 5	30
182	7	159	04 42 55	± 3	03 12	± 8	10.0 ± 2.0
183	7	159	04 43 10	± 10	44 45	± 7	12.0 ± 2.0
184	7	159	04 44 01	± 4	50 26	± 6	11.5 ± 2.5
185	7	159	04 46 33	± 4	44 59	± 4	21.5 ± 3.5
186	7	159	04 48 50	± 3	51 46	± 6	9.5 ± 2.0
187	7	159	04 49 13	± 5	29 10	± 4	16.0 ± 5.5
188	3	101	04 50	± 480	10	± 40	200
189	5	86	04 51 30	± 24	02 33	± 6	10
190	7	159	04 52 57	± 2	22 50	± 6	16.5 ± 2.5
191	5	86	04 54 54	± 30	06 43	± 8	13
192	2	81	04 56	± 120	33	± 90	125
193	5	86	04 56 18	± 18	05 20	± 8	10
194a	4	159	04 57 00	± 120	46 30	± 60	80
194b	6	960	04 57 30	± 30	46 26	± 4	22.5 ± 4.5
195	5	86	04 58 30	± 24	01 24	± 6	15
196	7	159	04 59 59	± 3	25 20	± 3	23.0 ± 4.0
196a	3	101	05 00	± 480	42	± 40	150
196b	7	159	05 01 21	± 4	38 03	± 8	85 ± 11

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts \cdot m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
196c	2	81	05 02	± 180	37	± 120	100 $\times 10^{-26}$
197	5	86	05 04 30	± 18	07 20	± 7	16
198a	5	86	05 10 54	± 18	01 02	± 6	38
198b	7	159	05 10 58	± 3	01 12	± 12	12.0 \pm 3.0
199	7	159	05 12 45	± 2	51 24	± 6	8.0 \pm 1.5
200	9	81	05 15 40	± 25	77 41	± 15	27
201	5	86	05 16 24	± 24	09 58	± 8	20
202	5	86	05 16 30	± 12	03 59	± 8	17
203	7	159	05 16 50	± 3	50 48	± 6	8.5 \pm 1.5
204	7	159	05 17 23	± 3	13 57	± 4	19.5 \pm 5.0
205	9	81	05 18 12	± 25	80 56	± 30	18
206	7	159	05 18 49	± 8	22 40	± 10	19 \pm 6
207	7	159	05 21 53	± 5	08 55	± 8	10.0 \pm 5.5
208	7	159	05 22 28	± 3	32 42	± 8	20.5 \pm 6.0
209	9	81	05 23 02	± 15	74 25	± 10	26
210	7	159	05 25 22	± 6	12 49	± 8	9.0 \pm 2.0
211	5	86	05 28 54	± 18	06 35	± 6	30
212	3	101	05 30	± 120	22	± 20	1,900
213	7	159	05 31 04	± 3	36 30	± 5	11.5 \pm 2.5
214a	6	960	05 31 30		21 59.3		1,030 \pm 45
214b	7	159	05 31 31.5		21 59.2		1,500
214c	1	100	05 31 37		22 01		1,850
214d	2	81	05 31 37	± 10	22 10	± 20	1,250
214e	1	100	05 32		24		600
215	6	960	05 36		28		12.9 \pm 1.5
216a	7	159	05 38 46	± 4	49 51	± 6	63 \pm 12
217	5	86	05 38 48	± 24	05 43	± 8	9.2
216b	4	159	05 39	± 120	49 40	± 60	50
218	7	159	05 40 07	± 10	51 00	± 30	11 \pm 4
219	5	86	05 41 30	± 18	02 46	± 6	22
220	7	159	05 47 08	± 8	28 41	± 7	12.0 \pm 2.0
221	7	159	05 55 02	± 4	32 29	± 6	8.5 \pm 1.5
222	7	159	05 59 47	± 2	42 11	± 6	8.0 \pm 1.5
223	5	86	06 00 30	± 24	02 23	± 7	11
224	9	81	06 01 49	± 20	74 31	± 20	21
225	5	86	06 02 18	± 18	00 54	± 5	12
226	7	159	06 02 25	± 5	20 30	± 12	12.5 \pm 2.5
227	5	86	06 05 24	± 30	08 08	± 10	109
228	7	159	06 05 47	± 5	48 04	± 4	15.0 \pm 2.5
229	7	159	06 10 43	± 7	26 04	± 4	26 \pm 5
230	7	159	06 13 25	± 5	53 56	± 10	12.5 \pm 3.0
231	5	86	06 14 12	± 24	05 43	± 8	18
232a	6	960	06 14 16	± 6	22 36.4	± 3	129 \pm 6
233	7	159	06 14 24	± 5	22 49	± 5	14.0 \pm 2.5
232b	7	159	06 14 36	± 12	22 43	± 2	270 \pm 40
232c	8	100	06 14 40	± 10	22 38	± 5	470
234	5	86	06 15 18	± 24	03 36	± 8	8.8
235	2	81	06 17	± 120	33	± 120	85
236	7	159	06 18 50	± 5	14 31	± 8	21.5 \pm 4.0
237	5	86	06 20 18	± 24	09 00	± 10	153
238	7	159	06 21 43	± 2	40 16	± 5	19.0 \pm 3.5
239	7	159	06 22 21	± 4	26 55	± 6	8.5 \pm 2.0
240	5	86	06 24 48	± 18	02 50	± 5	18
241	9	81	06 27 37	± 20	74 45	± 10	30
242	7	159	06 28 22	± 4	25 07	± 7	10.5 \pm 2.0
243a	7	159	06 29 18	± 12	05 12	± 5	450 \pm 150
244	7	159	06 29 19	± 5	16 31	± 7	11.0 \pm 2.0
243b	6	960	06 29 24	± 10	04 53	± 3	105 \pm 2
243c	5	86	06 29 36	± 12	05 01	± 3	250
245	9	81	06 31 27	± 15	77 02	± 15	22
246	5	86	06 32 36	± 18	02 09	± 4	29
247	5	86	06 34 48	± 18	07 15	± 8	72
248	9	81	06 37 09	± 15	71 17	± 6	33
249	7	159	06 40 09	± 5	23 26	± 10	12.5 \pm 3.5
250	7	159	06 42 27	± 5	21 20	± 4	16.0 \pm 2.5
251a	7	159	06 42 36	± 6	05 36	± 10	8.0 \pm 2.5
251b	5	86	06 42 42	± 24	05 15	± 8	27
252	5	86	06 42 48	± 24	00 10	± 10	16
253	7	159	06 46 16	± 10	69 16	± 15	8 \pm 3
254	7	159	06 49 56	± 5	22 48	± 17	10.0 \pm 2.5
255	7	159	06 51 17	± 3	54 08	± 5	30 \pm 8
256	5	86	06 52 30	± 24	03 00	± 8	22
257	5	86	06 54 06	± 18	08 36	± 10	24

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
258	2	81	06 57	± 180	47 30	± 90	30 $\times 10^{-26}$
259	7	159	06 59 08	± 4	25 22	± 10	17.0 ± 6.0
260	7	159	07 01 00	± 3	40 14	± 5	15.5 ± 4.0
261	7	159	07 10 19	± 7	11 55	± 4	25.5 ± 5.0
262	3	101	07 15	± 240	27	± 40	80
263	9	81	07 16 40	± 30	83 01	± 10	31
264	7	159	07 16 55	± 3	17 11	± 7	8.5 ± 2.0
265	5	86	07 17 54	± 24	08 48	± 8	11
266	2	81	07 19	± 180	51 51	± 60	40
267	5	86	07 19 24	± 18	01 34	± 5	17
268	7	159	07 21 45	± 5	15 35	± 10	12.5 ± 4.5
269	7	159	07 22 58	± 5	68 00	± 10	10 ± 3
270	9	81	07 24 42	± 20	74 27	± 10	24
271	7	159	07 25 20	± 3	14 45	± 9	14.0 ± 5.0
272	7	159	07 27 19	± 3	27 02	± 6	9.0 ± 1.5
273	5	86	07 29 36	± 18	03 06	± 8	21
274	7	159	07 30 37	± 4	41 42	± 8	8.5 ± 1.5
275	7	159	07 32 20	± 20	70 20	± 10	17 ± 5
276	2	81	07 35	± 240	42	± 150	30
277	7	159	07 41 04	± 6	38 05	± 4	14.0 ± 3.0
278a	5	86	07 41 54	± 12	02 05	± 5	36
278b	7	159	07 42 26	± 8	01 54	± 10	9.0 ± 4.0
279	5	86	07 44 54	± 24	09 57	± 8	13
280	7	159	07 53 04	± 6	01 57	± 15	10.5 ± 2.5
281	7	159	07 53 33	± 6	38 18	± 6	8.0 ± 1.5
282	5	86	07 53 42	± 24	07 10	± 7	8.2
283	7	159	07 58 52	± 3	14 27	± 6	12.0 ± 2.0
284	7	159	08 02 10	± 2	10 34	± 8	11.0 ± 2.5
285	5	159	08 02 38	± 5	24 16	± 8	17.0 ± 4.0
286	5	86	08 03 24	± 24	04 48	± 8	8.7
287	7	159	08 06 25	± 6	40 17	± 12	12.5 ± 2.0
288a	2	81	08 08	± 15	48 15	± 30	100
288b	4	159	08 09	± 120	48	± 60	40
288c	7	159	08 10 03	± 3	48 22	± 3	66 ± 20
289	5	86	08 12 24	± 18	01 33	± 6	29
290	7	159	08 13 47	± 6	20 25	± 6	8.5 ± 2.0
291	9	81	08 15 56	± 15	74 24	± 15	28
292a	5	86	08 19 48	± 12	06 07	± 4	125
292b	7	159	08 19 57	± 4	06 09	± 6	16.0 ± 4.0
293	7	159	08 20 59	± 4	42 58	± 5	8.5 ± 1.5
294	2	81	08 22	± 180	36	± 90	40
295	7	159	08 25 11	± 3	29 28	± 5	10.5 ± 2.0
296	9	81	08 29 00	± 15	72 26	± 15	35
297	7	159	08 31 25	± 3	17 27	± 12	9.0 ± 1.5
298	7	159	08 31 48	± 12	17 09	± 10	22 ± 4
299	7	159	08 32 59	± 5	65 32	± 10	9 ± 3
300	5	86	08 33 24	± 18	00 42	± 7	17
301	5	86	08 34 30	± 18	09 30	± 7	13
302	7	159	08 35 28	± 4	57 50	± 5	11 ± 2
303	5	86	08 38 30	± 30	03 17	± 8	17
304	7	159	08 40 27	± 7	16 05	± 6	10.0 ± 2.5
305	5	86	08 41 00	± 24	07 28	± 7	14
306	9	81	08 41 18	± 45	71 08	± 10	24
307	5	86	08 43 18	± 24	02 20	± 8	9.4
308a	2	81	08 48	± 120	18	± 300	75
308b	3	101	08 50	± 240	13	± 40	160
308c	7	159	08 50 26	± 4	14 07	± 9	24.5 ± 4.5
309	2	81	08 51	± 120	53	± 60	22
310	5	86	08 54 54	± 24	09 55	± 8	14
311	5	86	08 55 00	± 24	03 36	± 8	9.0
312	7	159	08 55 05	± 5	27 58	± 5	10.0 ± 2.0
313	7	159	08 55 40	± 6	36 30	± 5	9.5 ± 2.0
314	7	159	08 56 00	± 5	14 25	± 8	21.5 ± 5.0
315	7	159	08 57 09	± 7	16 00	± 10	11.0 ± 2.0
316	3	101	09 00	± 480	34	± 40	70
317	3	101	09 00	± 240	48	± 20	200
318	7	159	09 01 53	± 2	06 11	± 9	8.5 ± 2.0
319	7	159	09 02 56	± 6	14 13	± 5	15.5 ± 4.5
320	7	159	09 06 23	± 3	43 07	± 2	23.5 ± 5.0
321	7	159	09 06 52	± 3	38 04	± 6	10.5 ± 2.0
322	5	86	09 09 12	± 18	08 23	± 7	13
323	5	86	09 15 12	± 12	09 35	± 6	40
324a	2	81	09 16	± 240	47	± 60	50

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
324b	4	159	09 16	± 120	45	± 60	30 $\times 10^{-26}$
324c	7	159	09 17 54	± 2	45 52	± 2	42 ± 9
325	7	159	09 18 07	± 3	26 36	± 5	10.5 ± 4.0
326	9	81	09 22 44	± 20	78 48	± 15	55
327	3	101	09 25	$\pm 1,920$	8	± 90	80
328a	2	81	09 32	± 360	39	± 120	35
328b	7	159	09 32 02	± 5	39 56	± 6	8.0 ± 1.5
329a	7	159	09 34 01	± 5	04 42	± 7	12.0 ± 2.5
329b	5	86	09 34 06	± 12	04 50	± 5	24
330	5	86	09 34 24	± 24	02 13	± 6	14
331	7	159	09 39 36	± 4	14 04	± 3	19.5 ± 3.5
332	7	159	09 41 41	± 7	10 05	± 7	11.0 ± 2.0
333	5	86	09 41 48	± 18	09 57	± 7	32
334	5	86	09 43 00	± 18	02 21	± 5	7.1
335a	5	86	09 44 54	± 12	07 39	± 4	89
335b	7	159	09 45 11	± 3	07 37	± 4	50 ± 20
336	7	159	09 47 25	± 5	14 30	± 7	17.0 ± 3.0
	9	81	09 48 01	± 20	74 09	± 25	53
337	7	159	09 48 21	± 7	24 20	± 7	10.0 ± 2.0
338a	7	159	09 49 27	± 3	00 08	± 14	31 ± 8
338b	5	86	09 49 42	± 12	00 06	± 5	36
339	5	86	09 50 30	± 18	09 00	± 7	16
340	7	159	09 51 20	± 5	70 05	± 15	12 ± 3
341	7	159	09 54 31	± 6	32 37	± 5	8.5 ± 2.5
342	5	86	09 55 18	± 12	03 35	± 5	18
343	2	81	09 57	± 120	56 30	± 90	33
344	7	159	09 57 03	± 5	30 13	± 4	10.0 ± 2.0
345	7	159	09 58 56	± 7	29 01	± 10	30 ± 8
346	2	81	10 00 30	± 30	43 15	± 60	75
347	7	159	10 03 33	± 3	48 24	± 5	8.0 ± 1.5
348	7	159	10 05 05	± 7	37 15	± 6	12.0 ± 2.5
349a	7	159	10 05 30	± 5	07 47	± 6	21.5 ± 4.5
349b	5	86	10 05 42	± 12	07 54	± 6	30
350	7	159	10 07 26	± 2	03 26	± 10	18.5 ± 9.0
351	7	159	10 07 27	± 5	44 33	± 10	15 ± 5
352	9	81	10 07 37	± 20	71 16	± 10	27
353	9	81	10 07 54	± 30	74 36	± 10	59
354	5	86	10 08 36	± 18	06 32	± 6	39
355	5	86	10 09 54	± 24	04 50	± 10	8.7
356	5	86	10 10 54	± 18	03 11	± 6	9.4
357	7	159	10 15 07	± 5	30 08	± 5	9.5 ± 2.0
358	7	159	10 19 10	± 3	22 11	± 5	13.0 ± 3.0
359	5	86	10 22 00	± 18	09 36	± 8	15
360	7	159	10 22 39	± 3	20 28	± 7	11.5 ± 2.5
361a	7	159	10 23 16	± 6	06 46	± 7	12.5 ± 4.5
361b	5	86	10 24 00	± 18	06 41	± 6	35
362	7	159	10 25 42	± 3	48 28	± 4	12.0 ± 2.5
363	3	101	10 30	± 120	44	± 20	220
364	2	81	10 33		56	± 60	33
365	9	81	10 33 11	± 30	73 25	± 12	28
366	3	101	10 35	± 240	35	± 40	100
367	5	86	10 38 12	± 18	02 36	± 8	13
368	7	159	10 40 15	± 7	12 22	± 6	12.0 ± 2.5
369	5	86	10 47 18	± 18	04 25	± 7	13
370	5	86	10 48 48	± 12	00 00	± 5	21
371	2	81	10 50	± 180	44 15	± 120	35
372	9	81	10 51 10	± 20	72 18	± 20	31
373	5	86	10 54 00	± 24	02 09	± 6	24
374	7	159	10 55 13	± 4	43 23	± 5	9.5 ± 2.0
375	5	86	10 56 48	± 24	09 15	± 7	19
376	7	159	10 58 24	± 4	33 04	± 6	8.5 ± 1.5
377	2	81	11 03	± 180	39 43	± 60	60
378	7	159	11 06 12	± 4	25 15	± 5	14.0 ± 3.5
379	5	86	11 06 30	± 30	09 45	± 7	16
380	9	81	11 06 39	± 20	77 10	± 20	24
381	7	159	11 06 44	± 6	38 53	± 7	9.0 ± 1.5
382	5	86	11 07 06	± 24	03 48	± 7	15
383	5	86	11 08 00	± 30	01 56	± 8	7.0
384	7	159	11 08 02	± 7	35 54	± 5	8.0 ± 2.0
385	7	159	11 11 55	± 5	40 58	± 3	21.5 ± 3.5
386	7	159	11 18 08	± 6	23 41	± 8	11.5 ± 2.0
387	5	86	11 20 12	± 24	07 40	± 8	8.2
388a	7	159	11 20 43	± 5	05 52	± 8	11.0 ± 2.5
388b	5	86	11 20 54	± 18	05 25	± 7	19
389	9	81	11 21 07	± 10	72 55	± 30	24

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
390	7	159	11 22 12	± 9	19 39	± 7	$(10.0 \pm 2.0) \times 10^{-26}$
391	5	86	11 22 30	± 24	02 20	± 8	8.5
392	7	159	11 24 31	± 3	32 40	± 5	9.5 ± 2.5
393	5	86	11 26 18	± 24	00 42	± 8	7.1
394	9	81	11 27 10	± 20	77 33	± 15	14
395	7	159	11 31 33	± 5	23 37	± 6	9.5 ± 2.0
396a	7	159	11 32 17	± 5	30 26	± 5	12.0 ± 3.0
396b	3	101	11 35	± 240	31	± 40	100
397	7	159	11 36 55	± 5	66 07	± 10	10 ± 2
398	5	86	11 37 24	± 24	01 24	± 7	13
399	5	86	11 38 24	± 24	05 43	± 8	8.2
400	3	101	11 40	± 240	50	± 20	200
401	5	86	11 42 24	± 18	08 14	± 7	14
402	5	86	11 42 30	± 30	09 30	± 10	8.6
403	7	159	11 42 34	± 6	20 00	± 9	37 ± 5
404	7	159	11 42 54	± 6	31 46	± 7	30 ± 7
405	2	81	11 43	± 180	44	± 120	30
406	7	159	11 44 39	± 4	52 03	± 4	14.0 ± 2.5
407	3	101	11 45	± 480	37	± 40	100
408	7	159	11 46 40	± 5	13 10	± 7	14.5 ± 2.5
409	6	86	11 47 00	± 18	05 40	± 7	11
410	2	81	11 48	± 240	64	± 180	50
411	7	159	11 50 52	± 4	51 15	± 6	8.5 ± 1.5
412	1	100	11 52		17		100
413	6	86	11 54 06	± 18	04 26	± 10	12
414	9	81	11 58 45	± 20	73 27	± 20	24
415	6	86	11 59 36	± 18	00 36	± 7	8.5
416	6	86	12 01 42	± 30	07 14	± 8	13
417	6	86	12 04 12	± 12	04 19	± 5	25
418	6	86	12 07 24	± 18	08 39	± 10	12
419	7	159	12 14 38	± 5	23 22	± 7	14.0 ± 3.0
420	6	86	12 14 48	± 12	04 00	± 6	30
421a	5	86	12 16 42	± 6	05 59	± 5	100
421b	7	159	12 16 55	± 4	06 15	± 15	20 ± 7
422	5	86	12 18 00	± 18	09 50	± 10	24
423	5	86	12 19 00	± 12	02 46	± 6	12
424	7	159	12 20 35	± 3	16 24	± 7	11.5 ± 4.0
425	7	159	12 21 10	± 8	42 37	± 5	10.5 ± 2.0
426a	5	86	12 26 36	± 12	02 17	± 4	167
426b	7	159	12 26 44	± 4	02 22	± 5	79 ± 21
427a	1	100	12 28 11		12 40		1,250
427b	6	960	12 28 18		12 40.1		500
427c	7	159	12 28 18		12 40.1		1,100
427d	2	81	12 28 25	± 70	12	± 20	1,050
427e	3	101	12 30	± 120	12 30	± 20	1,200
428	9	81	12 30 58	± 20	71 52	± 180	30
429	5	86	12 35 18	± 18	01 42	± 8	16
430	5	86	12 46 54	± 30	09 23	± 8	14
431a	7	159	12 48 49	± 3	45 33	± 5	8.0 ± 1.5
431b	4	159	12 49	± 120	47 30	± 180	18
432	7	159	12 50 38	± 5	50 50	± 8	12 ± 4
433	5	86	12 51 30	± 18	08 53	± 6	17
434a	7	159	12 54 43	± 4	47 35	± 10	25 ± 6
434b	3	101	12 55	± 480	49	± 40	120
435	9	81	12 57 15	± 60	82 20	± 20	30
436	9	81	13 00 20	± 15	71 57	± 20	40
437	5	86	13 02 00	± 12	09 02	± 7	22
438a	5	86	13 04 30	± 24	07 02	± 7	18
438b	7	159	13 05 22	± 8	06 50	± 8	14.0 ± 2.5
439	7	159	13 07 59	± 10	66 10	± 15	8 ± 2
440	5	86	13 08 00	± 18	06 10	± 7	22
441	7	159	13 09 33	± 6	27 47	± 5	10.0 ± 3.5
442	5	86	13 09 42	± 12	04 00	± 7	7.5
443	5	86	13 12 36	± 30	07 41	± 8	16
444	3	101	13 15	± 240	25	± 40	150
445	5	86	13 18 42	± 18	01 00	± 8	50
446	7	159	13 20 11	± 2	42 49	± 4	11.0 ± 2.0
447	9	81	13 23 44	± 7	71 09	± 10	26
448	2	81	13 26	± 240	48	± 180	35
449	7	159	13 28 49	± 5	30 40	± 6	30 ± 7
450	7	159	13 29 04	± 3	25 24	± 6	29 ± 7
451	5	86	13 30 18	± 18	02 18	± 8	19

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a						Intensity, I, watts - m ⁻² - (c/sec) ⁻¹		
			α , hr min sec			$\Delta\alpha$, sec	δ , deg min		$\Delta\delta$, min		
452	5	86	13	32	48	± 18	06	22	± 10	8.0	$\times 10^{-26}$
453a	7	159	13	36	38	± 3	39	04	± 4	15.0 \pm 5.5	
453b	2	81	13	40		± 150	38		± 90	30	
454	5	86	13	40	18	± 24	02	20	± 9	13	
455	7	159	13	45	00	± 4	52	08	± 4	12.0 \pm 2.0	
456	5	86	13	45	30	± 18	00	42	± 6	8.3	
457	7	159	13	46	33	± 5	30	03	± 10	8.0 \pm 2.5	
458	7	159	13	47	20	± 3	21	26	± 5	10.0 \pm 2.0	
459	7	159	13	48	49	± 5	64	54	± 10	9 \pm 2	
460	5	86	13	50	00	± 30	06	19	± 7	54	
461	7	159	13	50	01	± 6	31	31	± 5	12.5 \pm 2.0	
462	5	86	13	55	00	± 12	01	24	± 6	19	
463	5	86	13	55	24	± 18	04	50	± 7	10	
464	2	81	14	01		± 120	51		± 120	75	
465	5	86	14	01	00	± 18	09	22	± 7	28	
466	7	159	14	04	35	± 4	34	32	± 4	12.5 \pm 3.0	
467	9	81	14	06	14	± 20	76	08	± 20	13	
468	5	86	14	09	24	± 18	07	31	± 6	14	
469a	8	100	14	09	31.5	± 4	50	23	± 10	35	
469b	7	159	14	09	32	± 3	52	26	± 5	74 \pm 15	
469c	4	159	14	10		± 120	51	50	± 60	40	
470	5	86	14	13	00	± 30	05	49	± 8	17	
471	7	159	14	13	48	± 7	11	22	± 7	10.0 \pm 2.0	
472	5	86	14	15	48	± 18	01	06	± 7	17	
473a	7	159	14	16	40	± 8	06	46	± 7	61 \pm 16	
473b	5	86	14	16	42	± 6	06	43	± 4	114	
474	5	86	14	17	00	± 12	04	00	± 5	22	
475	7	159	14	19	02	± 3	41	54	± 4	10.5 \pm 2.0	
476	7	159	14	19	54	± 8	17	25	± 6	15.0 \pm 4.0	
477	3	101	14	20		± 180	51		± 40	200	
478	5	86	14	24	18	± 18	04	19	± 7	13	
479	5	86	14	25	24	± 24	00	36	± 6	16	
480	9	81	14	29	03	± 10	73	23	± 15	35	
481	9	81	14	32	12	± 60	78	01	± 20	20	
482	7	159	14	32	16	± 3	29	40	± 12	9.5 \pm 2.0	
483	5	86	14	32	30	± 18	06	38	± 7	17	
484	7	159	14	35	09	± 3	26	23	± 6	8.5 \pm 2.0	
485	5	86	14	35	30	± 12	03	36	± 6	47	
486	5	86	14	35	30	± 12	00	23	± 6	14	
487	5	86	14	37	06	± 30	08	58	± 8	12	
488	9	81	14	38	38	± 20	71	30	± 15	20	
489	3	101	14	40		± 180	42		± 40	100	
490	3	101	14	40		± 240	26		± 40	100	
491	7	159	14	40	02	± 6	52	04	± 7	9 \pm 3	
492	5	86	14	40	30	± 12	05	04	± 6	15	
493	5	86	14	45	00	± 12	07	54	± 6	19	
494	7	159	14	46	35	± 5	20	35	± 6	11.0 \pm 4.0	
495	7	159	14	48	09	± 2	63	33	± 15	15 \pm 4	
496	7	159	14	52	08	± 3	16	36	± 7	10.0 \pm 2.5	
497	7	159	14	52	55	± 3	69	42	± 20	9 \pm 2	
498	7	159	14	54	39	± 3	50	06	± 6	10 \pm 4	
499	5	86	14	56	30	± 18	04	01	± 30	11	
500	7	159	14	57	07	± 3	14	26	± 7	11.5 \pm 2.5	
501	2	81	14	59		± 180	58		± 90	40	
502	2	81	15	00		± 120	70		± 60	90	
503	5	86	15	00	06	± 24	06	15	± 10	15	
504	2	81	15	01		± 120	36		± 180	40	
505a	7	159	15	02	48	± 2	26	14	± 5	72 \pm 13	
505b	8	169	15	02	48.5	± 1.5	26		± 15	6	
506	7	159	15	03	00	± 6	60	07	± 4	10.5 \pm 2.0	
507	9	81	15	04	42	± 20	76	30	± 10	20	
508	7	159	15	06	12	± 7	12	23	± 9	8.5 \pm 2.0	
509a	7	159	15	07	50	± 6	08	09	± 15	21.0 \pm 4.5	
509b	5	86	15	08	12	± 12	08	09	± 7	42	
510	5	86	15	08	36	± 12	06	08	± 6	24	
511	5	86	15	09	48	± 30	01	42	± 48	20	
512	3	101	15	10		± 240	11		± 90	100	
513	7	159	15	10	27	± 3	45	33	± 5	8.5 \pm 1.5	
514	7	159	15	11	32	± 4	26	19	± 7	26 \pm 8	
515	7	159	15	13	50	± 6	18	35	± 8	8.5 \pm 2.0	
516a	8	169	15	14	10.5	± 3	07		± 60	45	
516b	5	86	15	14	12	± 12	07	11	± 36	140	
516c	7	159	15	14	19	± 5	07	11	± 4	55 \pm 14	
517	5	86	15	14	24	± 30	00	18	± 48	16	

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
518	7	159	15 17 52	± 6	20 28	± 5	$(14.5 \pm 5.0) \times 10^{-26}$
519	5	86	15 19 18	± 12	07 55	± 50	50
520	7	159	15 22 48	± 6	54 39	± 4	16.5 ± 2.5
521	9	81	15 25 34	± 10	72 51	± 20	41
522	2	81	15 29	± 300	55	± 90	45
523	7	159	15 29 37	± 5	55 53	± 6	8.0 ± 1.5
524	7	159	15 29 41	± 6	24 18	± 10	15.0 ± 2.5
525	3	101	15 30	± 480	26	± 40	100
526	7	159	15 30 47	± 3	53 59	± 4	11.5 ± 2.0
527	5	86	15 33 18	± 30	09 29	± 8	13
528	5	86	15 34 06	± 12	02 38	± 6	17
529	5	86	15 36 06	± 24	01 42	± 7	12
530	5	86	15 37 24	± 18	06 08	± 8	22
531	7	159	15 40 57	± 5	60 18	± 10	9 ± 2
532	5	86	15 42 06	± 18	04 06	± 7	17
533	5	86	15 42 24	± 12	02 20	± 5	16
534	7	159	15 47 34	± 5	21 33	± 7	18 ± 5
535	5	86	15 48 54	± 12	03 10	± 6	18
536	7	159	15 49 08	± 5	62 50	± 4	15 ± 5
537	7	159	15 49 25	± 4	17 47	± 6	12.5 ± 2.5
538a	5	86	16 00 00	± 12	02 13	± 5	100
538b	7	159	16 00 01	± 4	02 05	± 8	34 ± 6
539	2	81	16 01	± 240	66 30	± 60	70
540	7	159	16 01 07	± 6	30 09	± 7	8.0 ± 2.0
541	5	86	16 02 48	± 24	01 05	± 7	45
542	5	86	16 03 18	± 12	00 06	± 6	35
543	5	86	16 07 00	± 4	04 25	± 7	17
544	2	81	16 08	± 120	40	± 240	35
545	7	159	16 08 11	± 3	33 07	± 5	11.0 ± 2.5
546	7	159	16 08 59	± 5	66 10	± 6	24 ± 4
547	7	159	16 10 11	± 6	22 41	± 9	10.5 ± 3.0
548	9	81	16 12 32	± 15	76 44	± 18	16
549	5	86	16 13 18	± 18	04 25	± 6	27
550	7	159	16 14 44	± 4	30 09	± 6	16.0 ± 2.5
551	7	159	16 15 05	± 4	21 11	± 4	14.0 ± 2.5
552	7	159	16 18 07	± 4	17 44	± 8	16.0 ± 3.5
553	7	159	16 18 16	± 4	13 45	± 11	10.5 ± 5.0
554	9	81	16 19 50	± 180	79 59	± 30	15
555	7	159	16 21 44	± 7	23 48	± 5	13.5 ± 2.5
556	5	86	16 22 12	± 18	08 21	± 6	14
557	9	81	16 22 37	± 180	82 08	± 20	22
558a	2	81	16 24	± 60	38	± 90	70
559	7	159	16 25 12	± 2	44 20	± 5	8.5 ± 1.5
558b	7	159	16 26 54	± 5	39 38	± 3	49 ± 10
560	7	159	16 27 10	± 3	14 43	± 4	14.5 ± 2.5
561	7	159	16 27 42	± 5	23 40	± 7	9.5 ± 2.0
562	7	159	16 28 41	± 5	30 09	± 11	8.5 ± 3.5
563	5	86	16 29 00	± 30	09 08	± 10	22
564	3	101	16 30	± 240	18	± 40	130
565	7	159	16 34 32	± 3	26 53	± 7	10.5 ± 2.0
566	7	159	16 35 40	± 5	62 51	± 10	18 ± 3
567	5	86	16 38 06	± 18	05 44	± 10	23
568	3	101	16 40	± 240	41	± 40	80
569	7	159	16 41 15	± 7	37 28	± 10	8.5 ± 1.5
570	7	159	16 41 33	± 5	40 11	± 5	9.0 ± 1.5
571	7	159	16 41 36	± 2	17 24	± 5	15.5 ± 3.0
572	7	159	16 43 08	± 7	13 16	± 5	16.0 ± 3.0
573	5	86	16 44 42	± 18	01 43	± 8	33
574a	3	101	16 45	± 120	6	± 90	400
574b	5	86	16 48 42	± 6	05 04	± 2	890
574c	7	159	16 48 43	± 5	05 10	± 10	300 ± 50
574d	6	960	16 48 43	± 2	05 06.4	± 5	73.5 ± 6
574e	2	81	16 49	± 240	7	± 540	300
574f	1	100	16 50		5		200
575	9	81	16 55 08	± 7	71 22	± 6	39
576	7	159	16 58 10	± 4	47 08	± 6	13.5 ± 2.0
577	7	159	17 00 32	± 6	36 55	± 5	9.0 ± 2.5
578a	2	81	17 03	± 360	63 30	± 90	50
579	5	86	17 03 12	± 18	09 16	± 10	78
578b	7	159	17 04 03	± 6	60 48	± 5	15 ± 3
580	7	159	17 09 15	± 4	46 02	± 4	12.0 ± 2.0
581	8	169	17 18 01	± 1.5	00	± 120	14
582	7	159	17 19 01	± 7	19 24	± 10	12.0 ± 3.0
583	5	86	17 22 18	± 18	05 44	± 4	36

^a α , right ascension; δ declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
584	7	159	17 22 31	± 5	38 17	± 5	$(9.0 \pm 1.5) \times 10^{-26}$
585	7	159	17 23 21	± 4	51 13	± 5	14.0 ± 3.5
586	9	81	17 24 30	± 20	79 48	± 20	24
587	7	159	17 26 34	± 8	31 50	± 6	9.0 ± 2.0
588	9	81	17 28 52	± 30	73 57	± 20	37
589	7	159	17 29 50	± 4	20 39	± 7	12.0 ± 5.5
590	7	159	17 34 04	± 3	40 39	± 5	10.0 ± 2.0
591	3	101	17 40	± 80	14	± 40	150
592	7	159	17 45 06	± 5	18 42	± 7	11.5 ± 2.5
593	7	159	17 47 26	± 3	59 41	± 5	11 ± 2
594	7	159	17 54 01	± 5	37 34	± 5	10.5 ± 2.0
595	7	159	17 56 01	± 5	10 45	± 5	15.5 ± 5.5
596	5	86	17 56 06	± 24	02 46	± 10	48
597	7	159	17 57 00	± 3	55 06	± 5	9.0 ± 2.0
598	2	81	18 00	± 30	47 30	± 30	85
599	7	159	18 01 10	± 3	55 06	± 5	9.0 ± 2.0
600	7	159	18 02 42	± 5	10 57	± 6	13.5 ± 2.5
601	5	86	18 03 54	± 24	00 12	± 7	33
602	5	86	18 04 18	± 24	03 40	± 10	27
603	7	159	18 05 39	± 2	25 46	± 5	13.0 ± 2.5
604	7	159	18 06 47	± 5	32 29	± 6	9.0 ± 2.0
605	7	159	18 07 04	± 2	69 55	± 20	9 ± 3
606	7	159	18 10 35	± 4	42 56	± 6	9.0 ± 1.5
607	9	81	18 11 37	± 15	73 34	± 15	21
608	7	159	18 14 16	± 5	31 21	± 5	11.0 ± 2.5
609	5	86	18 15 18	± 24	00 04	± 10	14
610	5	86	18 17 24	± 18	03 05	± 6	41
611	7	159	18 19 54	± 7	26 06	± 7	9.0 ± 2.5
612	7	159	18 19 58	± 5	15 09	± 7	11.0 ± 2.5
613	7	159	18 21 15	± 5	36 18	± 5	14.5 ± 2.5
614	7	159	18 23 39	± 4	57 41	± 5	9.5 ± 1.5
615	9	81	18 23 40	± 15	73 51	± 20	30
616	7	159	18 24 16	± 5	23 17	± 7	8.5 ± 2.0
617	9	81	18 26 19	± 15	72 16	± 15	21
618	5	86	18 26 30	± 24	00 25	± 6	50
619a	2	81	18 27		47 45	± 60	75
619b	7	159	18 28 12	± 3	48 43	± 3	70 ± 10
620	5	86	18 29 36	± 24	09 40	± 10	45
621	7	159	18 32 28	± 2	47 24	± 4	14.5 ± 3.5
622	7	159	18 33 12	± 4	30 23	± 4	18.0 ± 5.0
623	6	960	18 33 21	± 6	32 40.6	± 1	6.9 ± 0.6
624	7	159	18 33 35	± 3	65 20	± 20	8 ± 3
625	7	159	18 34 12	± 6	34 46	± 5	13.0 ± 2.5
626	2	86	18 34 36	± 18	03 37	± 6	20
627	7	159	18 36 13	± 4	17 11	± 8	27 ± 6
628	2	81	18 40	± 600	80	± 60	95
629	7	159	18 42 37	± 3	45 32	± 3	22.5 ± 3.5
630a	5	86	18 42 42	± 42	09 30	± 10	54
631	1	100	18 43		5		300
630b	7	159	18 43 12	± 3	09 49	± 4	22.5 ± 4.5
632	5	86	18 43 18	± 24	07 15	± 8	28
633	5	86	18 44 00	± 30	05 07	± 8	25
634	9	81	18 49 08	± 20	72 58	± 20	35
635a	7	159	18 53 35	± 5	01 15	± 7	680 ± 120
635b	5	86	18 53 42	± 6	01 29	± 5	550
636	7	159	18 55 48	± 7	53 04	± 5	10.0 ± 2.0
637	7	159	18 57 02	± 6	12 56	± 7	18.5 ± 3.5
638	3	101	19 00	± 80	7	± 90	300
639	7	159	19 00 16	± 5	32 06	± 10	8.0 ± 2.0
640	2	81	19 01	± 240	57 30	± 60	38
641	7	159	19 01 42	± 5	05 31	± 6	24.5 ± 7.0
642	7	159	19 05 06	± 8	07 07	± 4	29 ± 9
643	9	81	19 08 25	± 15	74 05	± 25	33
644	7	159	19 08 45	± 4	09 09	± 3	43 ± 7
645	5	86	19 09 00	± 18	05 05	± 6	59
646	9	81	19 10 50	± 20	78 53	± 20	26
647	5	86	19 12 42	± 18	00 09	± 8	29
648	7	159	19 16 30	± 9	53 32	± 9	8.0 ± 2.0
649	5	86	19 17 30	± 18	00 54	± 10	20
650	9	81	19 18 46	± 30	77 54	± 60	18
651	7	159	19 22 04	± 5	13 43	± 6	25 ± 4
652	5	86	19 30 06	± 18	00 54	± 7	20
653	5	86	19 32 24	± 24	09 43	± 6	30
654	5	86	19 33 48	± 18	05 55	± 8	18

^a α , right ascension; δ , declination.

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TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Continued

Source	Survey	Frequency, mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
655	5	86	19 37 24	± 18	04 13	± 12	54 $\times 10^{-26}$
656	5	86	19 37 42	± 24	01 06	± 10	8.3
657	7	159	19 39 37	± 4	60 35	± 3	22 ± 3
658	7	159	19 40 23	± 7	50 32	± 8	15.0 ± 3.0
659	5	86	19 43 48	± 18	09 16	± 8	13
660a	7	159	19 49 41	± 6	02 23	± 5	23 ± 6
660b	5	86	19 49 48	± 18	02 26	± 2	64
661a	4	159	19 57 22	± 25	40 22	± 16	5,700
661b	3	101	19 57 30		40 30		13,000
661c	6	960	19 57 44.5		40 35.8		2,160 ± 120
661d	7	159	19 57 44.5		40 35		8,600
661e	1	100	19 58 18		40 36		12,500
662	7	159	20 00 19	± 4	00 20	± 9	9.5 ± 2.0
663	7	159	20 07 52	± 5	51 39	± 20	8 ± 2
664a	8	169	20 12 15	± 1	23 25	± 15	4
664b	7	159	20 12 17	± 2	23 26	± 5	102 ± 20
665	5	86	20 15 12	± 18	06 49	± 8	15
666	5	86	20 15 42	± 18	01 54	± 7	14
667	5	86	20 16 54	± 18	04 00	± 7	13
668	7	159	20 18 08	± 7	29 31	± 8	36 ± 7
669	7	159	20 19 47	± 5	09 59	± 8	16.0 ± 4.0
670	4	159	20 22 00		40 00		300
671	7	159	20 22 02	± 10	69 28	± 15	8 ± 2
672	5	86	20 25 36	± 36	06 22	± 8	16
673	9	81	20 28 44	± 60	75 39	± 15	59
674	7	159	20 29 52	± 4	25 41	± 7	10.0 ± 2.0
675	7	159	20 30 17	± 3	18 57	± 7	9.5 ± 2.0
676	7	159	20 33 13	± 5	52 57	± 10	9 ± 3
677	5	86	20 35 42	± 30	04 13	± 10	11
678	7	159	20 35 49	± 6	34 10	± 5	15.5 ± 4.5
679	7	159	20 37 07	± 3	51 07	± 10	16.0 ± 3.0
680	5	86	20 37 18	± 30	05 20	± 8	14
681	7	159	20 38 30	± 5	24 25	± 7	10.5 ± 2.5
682	5	86	20 39 06	± 18	00 48	± 7	12
683	9	81	20 41 30	± 30	75 43	± 15	47
684	7	159	20 41 45	± 5	50 20	± 15	8.0 ± 2.0
685	5	86	20 42 24	± 30	03 29	± 7	11
686	7	159	20 43 51	± 7	40 21	± 9	13.5 ± 3.0
687a	4	159	20 44 44	± 60	50 20	± 45	200
687b	6	960	20 45 12		50 30		60 ± 6
688	7	159	20 45 12	± 10	46 31	± 7	8.0 ± 2.0
689a	7	159	20 45 43	± 4	06 50	± 6	16.0 ± 4.0
690	5	86	20 45 54	± 18	01 54	± 7	19
689b	5	86	20 45 54	± 18	06 57	± 7	22
691	5	86	20 45 42	± 18	04 00	± 7	10
692	6	960	20 50 00		30		33 ± 3
693	5	86	20 55 24	± 24	00 42	± 4	104
694	5	86	20 55 42	± 24	05 43	± 8	19
695	7	159	20 58 46	± 4	25 59	± 7	9.5 ± 2.0
696	9	81	20 59 27	± 10	72 23	± 7	30
697	9	81	21 03 44	± 20	76 17	± 10	59
698	7	159	21 05 05	± 5	21 12	± 12	12.0 ± 2.5
699	7	159	21 06 26	± 4	47 20	± 8	19.5 ± 4.5
700	5	86	21 07 42	± 24	09 19	± 10	12
701	5	86	21 12 42	± 18	04 06	± 5	12
702	7	159	21 12 57	± 5	62 17	± 10	11 ± 2
703	7	159	21 16 57	± 5	60 35	± 3	100 ± 40
704	7	159	21 17 11	± 4	49 22	± 4	31 ± 6
705	7	159	21 20 30	± 2	17 04	± 5	13.5 ± 2.5
706	7	159	21 21 31	± 4	24 48	± 7	62 ± 10
707	5	86	21 21 54	± 18	02 45	± 6	17
708	7	159	21 22 32	± 5	15 49	± 12	10.5 ± 4.0
709	9	81	21 23 24	± 30	75 04	± 40	24
710a	5	86	21 26 24	± 12	07 15	± 7	27
710b	7	159	21 26 39	± 5	07 27	± 10	12.5 ± 3.0
711	5	86	21 27 06	± 30	01 06	± 8	67
712	9	81	21 34 41	± 15	74 45	± 30	21
713	5	86	21 36 00	± 24	03 47	± 6	12
714	4	159	21 37 00	± 120	56 30	± 90	50
715	5	86	21 39 48	± 24	02 45	± 7	18
716	7	159	21 41 56	± 4	27 50	± 8	21.0 ± 3.5
717	5	86	21 42 24	± 18	07 54	± 8	15
718	5	86	21 42 30	± 24	04 00	± 5	11
719	7	159	21 45 00	± 3	15 03	± 5	16.0 ± 5.0

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(a) Northern hemisphere - Concluded

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I , watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
720	5	86	21 49 36	± 24	07 52	± 18	23 $\times 10^{-26}$
721	5	86	21 50 30	± 24	05 17	± 17	17
722	6	960	21 51 37	± 7	46 50	± 13	4.5 \pm 0.6
723	5	86	21 52 12	± 24	02 08	± 17	15
724	7	159	21 53 48	± 6	37 42	± 18	43 \pm 7
725	7	159	21 57 20	± 5	50 22	± 10	8.0 \pm 2.0
726	5	86	21 58 18	± 30	05 16	± 17	8.3
727	5	86	21 59 54	± 18	04 25	± 15	8.4
728	7	159	22 03 09	± 5	62 12	± 10	11 \pm 3
729	9	81	22 03 36	± 10	72 24	± 15	38
730	9	81	22 03 39	± 15	73 30	± 20	20
731	7	159	22 04 42	± 5	29 15	± 15	12.5 \pm 2.5
732	5	86	22 06 30	± 24	01 54	± 17	26
733	5	86	22 10 00	± 30	07 41	± 16	14
734	7	159	22 10 30	± 4	10 50	± 16	33 \pm 6
735	5	86	22 10 48	± 30	08 48	± 17	31
736	9	81	22 14 58	± 20	77 37	± 15	26
737	5	86	22 21 24	± 30	02 17	± 17	8.1
738	5	86	22 22 24	± 24	05 55	± 15	16
739	7	159	22 24 27	± 6	39 20	± 17	9.0 \pm 1.5
740	5	86	22 26 36	± 18	08 27	± 17	19
741	7	159	22 28 15	± 3	44 28	± 15	9.5 \pm 2.0
742	7	159	22 29 09	± 6	38 57	± 17	11.5 \pm 2.0
743	6	960	22 29 53	± 6	11 28.2	± 2	7.2 \pm 0.6
744	5	86	22 34 54	± 24	05 43	± 18	12
745	7	159	22 39 43	± 10	41 22	± 16	8.0 \pm 1.5
746	5	86	22 39 54	± 24	04 28	± 18	12
747	7	159	22 40 40	± 7	15 45	± 17	9.0 \pm 2.0
748	9	81	22 41 30	± 20	76 40	± 10	24
749	7	159	22 43 30	± 5	39 21	± 13	50 \pm 10
750	7	159	22 44 14	± 5	17 10	± 18	10.0 \pm 2.0
751	5	86	22 46 54	± 18	07 00	± 18	15
752	7	159	22 47 26	± 9	15 50	± 10	11.5 \pm 4.5
753	5	86	22 49 30	± 30	09 43	± 17	17
754	5	86	22 50 24	± 12	03 35	± 15	11
755	5	86	22 51 42	± 18	00 54	± 17	13
756	5	86	22 52 18	± 18	02 43	± 17	16
757	7	159	22 53 27	± 5	13 12	± 15	15.0 \pm 2.5
758	5	86	22 55 18	± 24	08 08	± 16	16
759	5	86	22 57 12	± 24	09 43	± 18	15
760	5	86	23 05 06	± 24	03 23	± 16	9.4
761	5	86	23 08 12	± 18	07 28	± 16	22
762	9	81	23 08 16	± 20	77 46	± 15	21
763a	7	159	23 09 19	± 5	09 06	± 18	10.0 \pm 2.0
763b	5	86	23 09 36	± 24	09 16	± 18	51
764	7	159	23 09 36	± 3	18 25	± 15	12.5 \pm 2.0
765	7	159	23 09 37	± 5	05 09	± 14	12.5 \pm 3.5
766	5	86	23 10 30	± 18	04 50	± 16	18
767a	5	86	23 14 00	± 06	03 53	± 13	57
767b	7	159	23 14 05	± 3	03 55	± 15	25 \pm 5
768	7	159	23 18 15	± 5	23 37	± 15	13.0 \pm 2.5
769	5	86	23 19 00	± 24	09 16	± 17	7.8
770a	6	960	23 21 11.4		58 31.9		3,120 \pm 150
770b	2	81	23 21 12	± 10	58 32	± 14	22,000
770c	7	159	23 21 12		58 32.1		13,000
770d	4	159	23 21 36	± 30	58 38	± 10	9,250
771	7	159	23 23 33	± 2	40 26	± 15	10.0 \pm 2.0
772	5	86	23 24 54	± 24	06 49	± 18	15
773	5	86	23 25 00	± 24	03 54	± 16	17
774	7	159	23 25 30	± 6	26 50	± 16	14 \pm 4
775	5	86	23 31 18	± 24	01 03	± 16	8.6
776	7	159	23 33 58	± 5	20 53	± 17	8.0 \pm 1.5
777	3	101	23 35	± 480	10	± 90	90
778	5	86	23 35 30	± 42	05 39	± 17	13
779	7	159	23 35 57	± 4	25 38	± 15	50 \pm 20
780	7	159	23 38 41	± 3	22 00	± 18	9.0 \pm 2.0
781	5	86	23 39 18	± 18	04 58	± 30	13
782	7	159	23 46 00	± 4	18 37	± 18	8.0 \pm 1.5
783	7	159	23 46 31	± 5	50 39	± 16	8.0 \pm 1.5
784	7	159	23 50 48	± 10	32 42	± 14	12.0 \pm 2.5
785	9	81	23 50 56	± 20	79 34	± 20	40
786	7	159	23 53 53	± 2	43 48	± 15	8.0 \pm 2.5
787	7	159	23 56 46	± 3	41 25	± 17	8 \pm 2
788	5	86	23 57 06	± 30	09 48	± 30	12

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
1	5	86	00 00 00	± 12	17 52	± 5	28 $\times 10^{-26}$
2	5	101	00 00 00	± 240	14	± 40	150
3	5	86	00 00 18	± 18	15 28	± 5	15
4	5	86	00 00 36	± 18	12 23	± 6	12
5a	5	86	00 03 18	± 18	00 56	± 4	35
5b	7	159	00 03 49	± 5	00 23	± 7	16.5 ± 4.5
6	5	101	00 05 00	± 240	61	± 20	150
7	7	159	00 05 06	± 5	06 31	± 10	11.0 ± 3.0
8	5	86	00 05 36	± 18	19 58	± 6	17
9	5	86	00 06 00	± 24	06 19	± 8	15
10	9	81.5	00 06 36	± 10	27 34	± 120	28
11	5	86	00 09 12	± 12	19 07	± 5	13
12	5	86	00 12 24	± 18	15 07	± 8	34
13	5	86	00 15 54	± 18	13 02	± 5	52
14	5	86	00 16 12	± 12	10 46	± 5	23
15	7	159	00 17 04	± 2	04 38	± 9	13.5 ± 2.5
16	5	86	00 17 24	± 18	05 01	± 6	9.5
17	7	159	00 17 38	± 10	08 35	± 11	9.0 ± 2.0
18	5	86	00 17 42	± 18	02 51	± 4	23
19	5	86	00 18 36	± 18	19 11	± 5	8.7
20	5	86	00 18 48	± 18	01 42	± 6	9.8
21	9	81.5	00 19 13	± 20	32 30	± 500	50
22	9	81.5	00 20 46	± 10	28 00	± 500	17
23	5	86	00 21 30	± 24	08 14	± 6	24
24	9	81.5	00 24 25	± 15	26 00	± 180	24
25	5	86	00 25 00	± 24	16 48	± 6	6.0
26	5	86	00 25 18	± 24	13 10	± 7	15
27	5	86	00 27 42	± 12	11 50	± 10	14
28	5	86	00 29 24	± 18	15 33	± 6	8.8
29	9	81.5	00 32 06	± 10	22 32	± 120	30
30	5	86	00 32 18	± 12	08 27	± 4	13
31	5	86	00 32 30	± 18	16 50	± 6	12
32	5	86	00 32 30	± 18	18 14	± 5	17
33	5	86	00 32 36	± 18	07 32	± 6	9.0
34	9	81.6	00 33 00	± 10	29 14	± 60	17
35	9	81.6	00 34 20	± 15	32 30	± 500	37
36	5	86	00 35 00	± 36	12 35	± 8	9.6
37	6	960	00 34 24	± 10	01 20	± 4	5.1 ± 1.2
38	7	159	00 35 18	± 4	01 31	± 5	21.5 ± 3.0
39	6	960	00 35 40	± 8	02 23	± 4	10.2 ± 2.4
40	5	86	00 36 24	± 12	02 50	± 5	120
41	7	159	00 36 37	± 3	02 16	± 14	21.5 ± 7.0
42	5	86	00 38 00	± 24	13 13	± 7	10
43	5	86	00 39 00	± 18	15 44	± 6	14
44	5	86	00 39 00	± 24	06 23	± 5	10
45	5	86	00 39 12	± 6	09 43	± 18	56
46	9	81.6	00 39 52	± 20	22 59	± 60	17
47	9	81.6	00 40 46	± 10	29 30	± 120	40
48	5	86	00 42 54	± 18	00 05	± 5	12
49	5	86	00 43 30	± 24	14 49	± 6	9.0
50	5	86	00 45 48	± 24	17 58	± 7	8.9
51	5	86	00 46 00	± 18	07 01	± 5	12
52	5	86	00 46 42	± 18	02 48	± 6	18
53	5	86	00 48 48	± 18	12 28	± 5	18
54	5	86	00 50 06	± 18	19 53	± 7	11
55	5	81.5	00 51 23	± 20	28 05	± 240	24
56a	7	159	00 51 36	± 4	03 51	± 12	8.0 ± 2.0
56b	5	86	00 51 42	± 18	03 42	± 4	23
57	5	86	00 52 18	± 24	16 19	± 6	12
58	5	86	00 52 24	± 24	05 06	± 6	8.5
59	9	81.6	00 54 00	± 20	33 00	± 180	19
60a	5	86	00 54 30	± 6	01 39	± 2	90
60b	7	159	00 55 03	± 4	01 35	± 10	17.0 ± 6.0
61	5	86	00 56 54	± 18	13 40	± 6	13
62	5	86	00 57 12	± 18	15 22	± 6	17
63	5	86	00 57 36	± 18	17 24	± 5	29
64	9	81.6	00 58 33	± 15	22 08	± 90	37
65	5	86	00 58 54	± 18	14 30	± 6	9.8
66	5	86	01 01 36	± 12	12 27	± 5	18
67	9	81.6	01 02 00	± 10	27 30	± 500	37
68	9	81.6	01 04 04	± 20	34 30	± 500	45
69a	5	86	01 05 54	± 6	16 15	± 2	53

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
69b	6	960	01 05 47	± 10	16 19.8	± 2	$(7.2 \pm 1.5) \times 10^{-26}$
69c	7	159	01 06 00	± 12	16 18	± 12	20 ± 4
70	5	86	01 06 30	± 18	00 57	± 6	13
71	5	86	01 07 12	± 18	18 51	± 6	9.0
72	9	81.6	01 07 42	± 10	34 30	± 200	37
73	5	86	01 08 12	± 24	14 33	± 6	16
74	5	86	01 10 30	± 18	05 07	± 6	15
75	5	86	01 11 42	± 24	10 07	± 6	7.8
76	5	86	01 14 30	± 18	11 53	± 6	11
77	9	81.6	01 15 21	± 20	27 30	± 300	9
78	7	159	01 15 22	± 4	00 52	± 5	12.0 ± 2.5
79	5	86	01 16 48	± 30	16 45	± 10	13
80	5	86	01 16 48	± 6	19 00	± 6	14
81a	5	86	01 18 00	± 12	15 34	± 3	45
81b	7	159	01 18 06	± 12	15 55	± 12	22 ± 4
81c	6	960	01 18 05	± 12	15 44	± 6	8.4 ± 1.5
82	5	86	01 19 36	± 18	00 13	± 5	19
83	9	81.5	01 19 36	± 15	33 00	± 3	30
84	5	86	01 21 06	± 24	03 50	± 6	18
85a	6	960	01 23 20	± 4	01 37.7	± 2	8.1 ± 1.8
85b	7	159	01 23 35	± 2	01 32	± 9	26 ± 5
85c	5	86	01 23 30	± 6	01 35	± 2	88
86	5	86	01 24 54	± 18	12 10	± 6	7.0
87	5	86	01 25 06	± 12	14 13	± 3	30
88	5	86	01 27 54	± 18	15 38	± 5	18
89	5	86	01 28 48	± 18	07 03	± 6	19
90	9	81.6	01 30 31	± 15	29 30	± 120	22
91	5	86	01 30 48	± 18	00 26	± 5	10
92	9	81.6	01 32 13	± 15	33 00	± 180	47
93	5	86	01 35 06	± 12	09 25	± 4	18
94	5	86	01 35 24	± 18	02 06	± 5	13
95	9	81.6	01 35 32	± 15	33 00	± 180	32
96	5	86	01 36 54	± 24	17 49	± 6	10
97	5	86	01 38 24	± 24	18 25	± 7	8.0
98	3	101	01 40	± 180	49	± 40	80
99	9	81.6	01 40 19	± 15	33 00	± 180	31
100	5	86	01 40 24	± 12	16 51	± 4	28
101	5	86	01 43 42	± 12	02 27	± 5	12
102	9	81.6	01 44 17	± 30	32 30	± 300	50
103	5	86	01 45 30	± 24	00 02	± 6	12
104	5	86	01 45 36	± 18	18 44	± 7	16
105	5	86	01 47 36	± 24	09 09	± 6	9.4
106	5	86	01 47 36	± 18	11 11	± 6	10
107	5	86	01 47 54	± 18	13 11	± 7	8.1
108	5	86	01 49 54	± 12	03 52	± 4	20
109	5	101	01 50	± 8	22	± 20	80
110	5	86	01 50 36	± 24	14 54	± 6	12
111	7	159	01 50 42	± 5	04 17	± 10	10.5 ± 2.0
112	5	86	01 51 36	± 24	07 26	± 6	9.0
113	5	86	01 52 12	± 18	05 17	± 7	6.8
114	9	81.5	01 52 54	± 15	27 31	± 4	36
115	5	86	01 55 06	± 18	00 39	± 6	8.0
116	5	86	01 55 06	± 18	10 45	± 6	16
117	5	86	01 57 00	± 24	02 31	± 6	8.5
118	9	81.5	01 57 14	± 5	29 30	± 300	53
119a	5	86	01 59 36	± 18	11 47	± 6	14
119b	3	101	02 00	± 4	11	± 40	100
120	3	101	02 00	± 16	40	± 40	70
119c	7	159	02 00 12	± 2	11 47	± 10	10.5 ± 2.0
121	5	86	02 02 00	± 24	19 43	± 7	8.5
122	5	86	02 02 36	± 24	05 33	± 6	8.5
123	5	86	02 03 30	± 18	18 16	± 6	17
124	5	86	02 08 00	± 12	11 18	± 6	30
125	5	86	02 08 18	± 24	03 38	± 6	12
126	9	81.5	02 09 52	± 15	29 00	± 180	26
127	5	86	02 10 42	± 18	08 11	± 6	8.5
128	5	86	02 10 48	± 24	04 54	± 6	8.7
129	5	86	02 11 24	± 18	16 02	± 6	8.2
130	9	81.5	02 11 40	± 15	26 37	± 90	37
131	5	86	02 12 24	± 18	02 46	± 6	7.5
132a	7	159	02 13 06	± 12	13 29	± 12	13 ± 4
132b	5	86	02 13 12	± 6	13 19	± 3	42

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
133	5	86	02 14 12	± 18	00 54	± 6	12 $\times 10^{-26}$
134	5	86	02 14 48	± 24	17 58	± 8	8.5
135a	6	960	02 18 07	± 10	02 12	± 6	6.0 ± 0.9
135b	7	159	02 18 24	± 1	02 10	± 5	26 ± 5
135c	5	86	02 18 36	± 12	02 11	± 3	74
136	5	86	02 18 36	± 24	03 45	± 6	7.5
137	9	81.5	02 18 36	± 10	24 12	± 90	35
138	3	101	02 20	$\pm 1,920$	85	± 10	150
139	5	86	02 22 54	± 18	11 38	± 8	13
140	9	81.5	02 23 09	± 10	29 00	± 240	25
141	5	86	02 26 30	± 18	17 31	± 6	19
142	7	159	02 28 04	± 2	07 20	± 3	23 ± 2
143	5	86	02 29 24	± 18	04 55	± 5	12
144	5	86	02 29 48	± 24	00 18	± 6	14
145	5	86	02 29 48	± 18	06 57	± 5	15
146	5	86	02 30 48	± 24	02 40	± 6	11
147	5	86	02 30 48	± 18	10 12	± 5	17
148	3	101	02 35	± 240	4	± 90	50
149	5	86	02 35 24	± 6	19 42	± 3	44
150	5	86	02 36 00	± 24	14 45	± 7	14
151	5	86	02 36 18	± 24	18 20	± 6	9.5
152	7	159	02 39 19	± 3	03 15	± 14	8.0 ± 2.0
153	5	86	02 39 24	± 24	02 30	± 6	15
154a	5	86	02 40 00	± 6	00 09	± 3	35
154b	7	159	02 40 06	± 5	00 25	± 9	11.0 ± 2.5
155	5	86	02 42 48	± 18	05 21	± 5	25
156	5	86	02 43 36	± 18	09 50	± 7	8.7
157	9	81.5	02 44 24	± 15	26 14	± 90	30
158	5	86	02 45 48	± 18	16 47	± 6	6.2
159	5	86	02 46 12	± 24	13 29	± 8	15
160	5	86	02 46 18	± 24	07 46	± 6	9.0
161	5	86	02 47 30	± 18	18 10	± 5	9.3
162	9	81.5	02 53 07	± 15	30 00	± 300	32
163	5	86	02 54 06	± 24	03 30	± 6	11
164	5	86	02 56 12	± 18	16 52	± 6	12
165	5	86	02 56 48	± 18	05 06	± 6	8.8
166	5	86	02 57 48	± 18	07 30	± 5	11
167	5	86	03 03 30	± 18	12 21	± 5	18
168	5	86	03 05 24	± 24	16 44	± 6	17
169	5	86	03 07 30	± 18	13 33	± 7	16
170	7	159	03 07 59	± 5	03 00	± 11	8.0 ± 2.0
171	9	81.5	03 10 50	± 15	26 55	± 120	37
172	1	100	03 11	36			200
173	5	86	03 12 36	± 18	03 37	± 4	20
174	9	81.5	03 13 44	± 20	28 11	± 90	33
175	5	86	03 15 06	± 18	14 48	± 6	9.5
176	9	81.5	03 18 50	± 10	27 31	± 180	30
177	3	101	03 20	± 240	37 30	± 18	240
178	6	960	03 20 25	± 15	37 215	± 4	123 ± 6
179	9	81.5	03 22 04	± 15	31 24	± 180	37
180	5	86	03 27 54	± 18	16 51	± 5	16
181	9	81.5	03 29 05	± 10	25 44	± 90	24
182	5	86	03 29 48	± 18	07 40	± 5	12
183	5	86	03 31 06	± 24	18 48	± 6	12
184a	6	960	03 31 26	± 10	01 25	± 10	6.3 ± 0.9
184b	7	159	03 31 46	± 5	01 14	± 10	19.5 ± 4.5
184c	5	86	03 31 42	± 12	01 25	± 4	64
185	9	81.5	03 32 19	± 15	32 30	± 300	15
186	9	81.5	03 33 01	± 10	22 32	± 180	54
187	6	960	03 36 54	± 50	01 55	± 8	3.6 ± 1.2
188	9	81.5	03 37 10	± 7	24 12	± 60	16
189	5	86	03 39 00	± 18	04 55	± 5	8.8
190	9	81.5	03 41 45	± 15	32 30	± 300	24
191	5	86	03 44 06	± 12	11 13	± 4	34
192	5	86	03 46 00	± 24	04 20	± 7	16
193	5	86	03 46 24	± 24	13 08	± 6	10
194	5	86	03 49 18	± 12	14 38	± 18	44
195	5	86	03 49 36	± 12	07 25	± 6	25
196	5	86	03 49 42	± 12	10 08	± 5	21
197	7	159	03 50 08	± 3	07 17	± 10	15.5 ± 4.0
198	7	159	03 50 49	± 6	09 49	± 15	8.5 ± 2.0
199	9	81.5	03 51 22	± 10	27 31	± 180	50

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I , watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
200	5	86	03 56 30	± 30	03 50	± 6	11 $\times 10^{-26}$
201	5	86	03 57 30	± 18	16 20	± 7	18
202	5	86	03 59 12	± 18	02 10	± 6	16
203	7	159	03 59 21	± 4	09 03	± 12	8.5 ± 2.0
204	5	86	04 00 06	± 18	09 56	± 6	10
205	7	159	04 00 19	± 4	01 11	± 10	9.0 ± 2.0
206	5	86	04 00 54	± 18	08 54	± 6	19
207	9	81	04 04 22	± 15	32 30	± 300	20
208	5	86	04 05 00	± 18	13 20	± 8	14
209	5	86	04 05 24	± 6	12 26	± 5	31
210	5	86	04 05 30	± 18	05 37	± 5	12
211	5	86	04 06 00	± 18	06 46	± 6	17
212	5	86	04 08 54	± 24	16 27	± 6	10
213	5	86	04 09 30	± 18	01 50	± 5	15
214a	5	86	04 09 36	± 6	01 02	± 4	35
214b	7	159	04 09 55	± 3	01 01	± 9	11.5 ± 2.5
215	5	86	04 11 24	± 24	19 36	± 7	9.4
216	5	86	04 11 48	± 24	11 26	± 6	18
217	9	81.5	04 13 26	± 15	32 30	± 180	22
218	5	86	04 13 48	± 18	15 22	± 8	15
219a	7	159	04 14 53	± 6	05 52	± 11	8.5 ± 2.5
219b	5	86	04 15 30	± 18	05 35	± 7	36
220a	7	159	04 15 35	± 3	03 03	± 10	8.0 ± 3.0
220b	5	86	04 15 42	± 12	03 21	± 4	28
221	5	86	04 16 18	± 18	18 13	± 5	13
222	5	86	04 20 18	± 24	09 28	± 6	8.5
223	5	86	04 23 00	± 18	16 57	± 6	14
224	5	86	04 23 54	± 18	12 07	± 5	16
225	9	81.5	04 25 41	± 7	22 32	± 120	19
225	5	86	04 25 54	± 18	11 38	± 7	11
226	5	86	04 26 24	± 24	01 15	± 6	9.7
227	5	86	04 27 12	± 30	18 36	± 8	9.0
228	5	86	04 28 12	± 18	09 58	± 6	7.3
229a	5	86	04 30 54	± 12	08 44	± 6	11
229b	7	159	04 31 03	± 2	08 58	± 12	12.0 ± 2.5
230	5	86	04 32 00	± 12	13 26	± 5	38
231	9	81.5	04 32 09	± 15	28 12	± 180	27
232	5	86	04 32 54	± 18	05 30	± 4	10
233	5	86	04 32 54	± 24	16 38	± 6	15
234	9	81.5	04 32 59	± 7	22 13	± 180	27
235	5	86	04 36 54	± 24	15 00	± 7	7.3
236	5	86	04 38 18	± 18	12 10	± 6	8.0
237	7	159	04 38 20	± 2	02 19	± 11	8.5 ± 2.0
238	5	86	04 39 00	± 12	09 52	± 5	17
239	5	86	04 39 36	± 18	00 49	± 6	12
240a	3	101	04 40 00	± 240	18	± 40	150
241	9	81.5	04 40 12	± 10	22 49	± 20	20
240b	5	86	04 42 48	± 30	18 52	± 7	7.0
242	9	81.5	04 42 58	± 15	27 20	± 120	45
243	5	86	04 46 48	± 18	09 55	± 5	16
244	5	86	04 47 18	± 24	04 33	± 6	46
245	5	86	04 48 00	± 18	17 34	± 6	14
246	5	86	04 49 18	± 18	06 38	± 4	9.6
247	5	86	04 49 36	± 24	02 31	± 5	13
248a	3	101	04 50 00	± 480	30	± 40	100
248b	9	81.5	04 51 47	± 15	32 30	± 300	50
249	5	86	04 52 06	± 24	19 07	± 8	7.3
250	5	86	04 52 24	± 24	00 24	± 6	20
251	5	86	04 54 12	± 18	11 51	± 6	17
252	5	86	04 58 42	± 24	03 39	± 6	18
253	9	81.5	04 59 18	± 10	28 11	± 120	22
254	5	86	04 59 36	± 18	05 48	± 6	8.5
255	5	86	04 59 54	± 12	12 16	± 4	14
256	5	86	05 00 00	± 24	08 37	± 6	9.1
257	1	100	05 01 00	± 36	10 13	± 5	200
258	5	86	05 03 00	± 18	10 13	± 5	20
259	5	86	05 06 30	± 18	14 29	± 6	16
260	5	86	05 08 30	± 12	18 42	± 3	41
261	9	81.5	05 09 20	± 15	32 30	± 300	25
262	5	86	05 10 00	± 18	07 36	± 6	16
263	9	81.5	05 11 49	± 15	27 25	± 60	32
264	5	86	05 12 24	± 18	02 19	± 5	17
265	5	86	05 13 00	± 12	01 15	± 6	18

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
266	5	86	05 13 00	± 18	15 56	± 8	11 $\times 10^{-26}$
267	5	86	05 13 18	± 18	09 41	± 6	8.8
268	5	86	05 13 36	± 12	13 41	± 6	16
269	9	81.5	05 14 01	± 15	32 30	± 240	38
270	5	86	05 15 30	± 12	16 34	± 5	16
271a	1	100	05 18		44		300
271b	6	960	05 18 19	± 10	45 52	± 5	84 ± 6
272	5	86	05 18 18	± 18	06 15	± 5	17
273	5	86	05 21 12	± 24	11 59	± 6	11
274	9	81.5	05 21 30	± 20	33 00	± 180	25
275	9	81.5	05 22 00	± 7	26 51	± 60	25
276	5	86	05 22 12	± 24	02 46	± 6	16
277	5	86	05 22 18	± 24	07 22	± 6	15
278	5	86	05 23 36	± 18	09 36	± 6	12
279	5	86	05 23 48	± 18	18 24	± 6	14
280	5	86	05 24 12	± 18	13 36	± 6	16
281	5	86	05 24 34	± 18	16 31	± 7	12
282	5	86	05 24 34	± 18	17 35	± 6	8.2
283	5	86	05 25 24	± 18	10 45	± 6	16
284	9	81.5	05 26 06	± 15	28 42	± 120	31
285	5	86	05 26 36	± 24	14 48	± 7	8.3
286	5	86	05 27 34	± 18	00 03	± 5	15
287	3	101	05 30	± 240	46	± 20	250
288	9	81.5	05 32 01	± 5	25 26	± 60	17
289a	5	86	05 32 30	± 12	05 24	± 18	83
289b	7	159	05 32 48	± 12	05 18	± 4	45 ± 4
289c	6	960	05 32 49		05 25.3		360 ± 9
290	5	86	05 33 18	± 18	12 01	± 6	15
291	7	159	05 34 29	± 2	02 55	± 11	9.5 ± 3.5
292	5	86	05 34 36	± 24	18 31	± 8	12
293	5	86	05 35 00	± 24	17 18	± 8	15
294	5	86	05 35 18	± 18	13 16	± 8	14
295	5	86	05 37 06	± 18	16 04	± 8	9.7
296	5	86	05 38 00	± 30	02 20	± 10	88
297	5	86	05 39 06	± 24	01 25	± 6	23
298	5	86	05 40 06	± 24	05 16	± 6	9.5
299	9	81.5	05 40 26	± 10	22 29	± 60	40
300	9	81.5	05 41 05	± 15	32 30	± 240	30
301	5	86	05 42 00	± 24	12 33	± 8	8.0
302	5	86	05 43 42	± 18	17 33	± 7	17
303	5	86	05 45 36	± 24	04 42	± 8	6.1
304	5	86	05 46 36	± 24	06 41	± 6	9.0
305	9	81.5	05 47 41	± 20	34 30	± 240	26
306	5	86	05 48 00	± 24	08 08	± 6	15
307	5	86	05 48 42	± 18	15 48	± 6	8.7
308	5	86	05 49 18	± 12	10 32	± 4	17
309	5	86	05 51 00	± 18	16 59	± 6	8.5
310	5	86	05 51 42	± 30	14 19	± 7	8.7
311	5	86	05 51 54	± 18	12 29	± 6	9.5
312	5	86	05 52 00	± 18	02 00	± 6	29
313	5	86	05 53 06	± 30	01 00	± 6	19
314	5	86	05 54 48	± 18	03 27	± 6	18
315	9	81.5	05 54 57	± 10	35 30	± 180	37
316	5	101	05 55	± 480	56	± 40	160
317	5	86	05 56 48	± 18	08 03	± 5	14
318a	5	86	05 57 36	± 18	16 50	± 6	13
318b	5	101	06 00	± 480	17	± 40	70
319	9	81.5	06 03 50	± 20	32 30	± 240	31
320	5	86	06 03 54	± 18	10 45	± 6	9.2
321	5	86	06 04 30	± 18	04 02	± 5	9.0
322	5	86	06 04 36	± 24	17 49	± 7	15
323	5	86	06 06 06	± 12	07 21	± 4	23
324	5	86	06 07 18	± 24	14 40	± 7	14
325	9	81.5	06 10 13	± 10	22 15	± 60	21
326	9	81.5	06 11 26	± 15	28 00	± 120	17
327	5	86	06 12 00	± 12	03 53	± 5	15
328	5	86	06 14 48	± 30	15 00	± 7	19
329	9	81.5	06 17 12	± 15	27 30	± 300	15
330	5	86	06 17 48	± 30	16 36	± 10	65
331	9	81.5	06 17 53	± 15	35 30	± 180	37
332	5	86	06 20 18	± 24	13 39	± 8	9.5
333	9	81.5	06 21 52	± 15	27 30	± 240	22

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
334a	8	169	06 24	± 3	05 47	± 15	40 $\times 10^{-26}$
334b	6	960	06 24 37	± 10	05 51.4	± 2	24.0 ± 1.5
334c	7	159	06 24 41	± 3	05 56	± 10	78 ± 30
334d	5	86	06 25 00	± 6	05 56	± 18	120
335	5	86	06 25 48	± 18	12 52	± 8	16
336	5	86	06 27 42	± 24	02 25	± 6	8.7
337a	9	81.5	06 29 14	± 15	30 30	± 180	50
337b	3	101	06 30	± 16	30	± 40	100
338	5	86	06 34 06	± 24	15 46	± 7	16
339	5	86	06 34 54	± 18	13 44	± 8	9.3
340	5	86	06 36 18	± 18	16 50	± 6	18
341	5	86	06 38 54	± 30	06 40	± 8	9.5
342	5	86	06 39 00	± 30	08 01	± 6	50
343	9	81.5	06 40 04	± 15	26 13	± 60	22
344	5	86	06 42 12	± 24	10 19	± 6	84
345	5	86	06 44 00	± 12	15 33	± 6	18
346	9	81.5	06 44 58	± 15	25 44	± 90	16
347	5	86	06 45 00	± 24	02 06	± 6	33
348	5	86	06 45 18	± 24	08 10	± 6	17
349	5	86	06 45 36	± 24	09 16	± 6	11
350	7	159	06 45 36	± 5	06 16	± 12	8.0 ± 2.5
351	5	86	06 47 12	± 18	05 37	± 5	25
352	5	86	06 49 42	± 30	12 43	± 10	55
353	9	81.5	06 52 45	± 15	23 56	± 120	22
354	5	86	06 53 12	± 18	19 15	± 7	7.6
355	9	81.5	06 55 23	± 15	32 30	± 300	27
356	9	81.5	06 55 55	± 7	23 13	± 20	37
357	5	86	06 56 42	± 12	02 12	± 5	24
358	5	86	07 03 12	± 12	11 02	± 7	55
359a	5	86	07 03 36	± 24	19 13	± 7	10
359b	3	101	07 05	± 240	20	± 40	100
360	7	159	07 05 21	± 4	08 05	± 12	10.0 ± 2.5
361	9	81.5	07 06 20	± 15	30 30	± 240	24
362	5	86	07 07 00	± 18	00 58	± 7	11
363	5	86	07 10 24	± 18	09 06	± 5	21
364	5	86	07 12 00	± 18	14 30	± 10	17
365	5	86	07 12 42	± 12	02 41	± 4	25
366	9	81.5	07 12 44	± 15	27 12	± 60	20
367	5	86	07 13 48	± 24	11 20	± 5	25
368	9	81.5	07 14 23	± 20	31 30	± 240	25
369	5	86	07 16 12	± 24	17 07	± 7	17
370	9	81.5	07 20 11	± 15	26 04	± 30	25
371	5	86	07 21 24	± 18	18 38	± 5	19
372a	5	86	07 22 18	± 18	09 49	± 4	36
372b	7	159	07 22 33	± 4	09 30	± 12	9.5 ± 3.5
373	5	86	07 23 06	± 18	06 10	± 6	94
374	5	86	07 23 48	± 24	13 16	± 7	13
375a	5	86	07 24 24	± 12	02 00	± 4	29
375b	7	159	07 24 34	± 4	01 59	± 10	15.0 ± 3.0
376	9	81.5	07 24 49	± 12	35 30	± 240	37
377	5	86	07 26 06	± 12	14 51	± 6	17
378	9	81.5	07 27 58	± 15	24 38	± 60	10
379	5	86	07 29 42	± 24	18 17	± 8	29
380	5	86	07 31 24	± 24	05 31	± 6	8.6
381	5	86	07 32 54	± 18	15 59	± 6	12
382	5	86	07 34 12	± 18	19 38	± 6	11
383	9	81.5	07 34 33	± 30	30 30	± 240	25
384	5	86	07 34 48	± 24	15 00	± 7	9.2
385a	5	86	07 36 12	± 18	02 03	± 5	19
385b	7	159	07 36 58	± 4	01 42	± 11	8.5 ± 2.0
386	5	86	07 38 36	± 18	13 58	± 6	12
387	5	86	07 38 48	± 24	01 01	± 6	15
388	5	86	07 41 30	± 24	17 43	± 7	9.8
389	5	86	07 43 24	± 30	16 32	± 7	10
390	5	86	07 44 12	± 12	08 05	± 6	17
391	5	86	07 45 30	± 12	19 00	± 4	52
392	5	86	07 45 36	± 24	10 01	± 6	13
393	9	81.5	07 45 46	± 15	32 30	± 300	36
394	5	86	07 46 12	± 24	11 53	± 7	20
395	5	86	07 48 36	± 18	06 52	± 6	11
396	5	86	07 51 18	± 30	19 22	± 8	17
397	9	81.5	07 55 42	± 7	26 48	± 120	40

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a					Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min		
398	5	86	07 58 54	± 24	02 06	± 6	7.5 $\times 10^{-26}$	
399	5	86	07 59 42	± 18	09 40	± 6	17	
400	5	86	08 00 18	± 24	14 40	± 7	35	
401	5	86	08 01 00	± 12	04 13	± 6	14	
402	5	86	08 03 06	± 18	00 30	± 6	15	
403	5	86	08 03 24	± 18	17 11	± 5	18	
404	7	159	08 03 43	± 2	01 07	± 10	10.0 ± 2.0	
405	5	86	08 03 54	± 24	07 54	± 7	9.7	
406	5	86	08 05 18	± 18	12 37	± 6	14	
407	9	81.5	08 05 41	± 15	27 13	± 120	25	
408a	7	159	08 06 36	± 4	10 15	± 12	21.0 ± 4.0	
408b	5	86	08 07 00	± 12	10 27	± 3	40	
409a	5	86	08 09 18	± 12	05 40	± 5	22	
410	9	81.5	09 09 29	± 15	30 30	± 240	20	
409b	3	101	08 10	± 80	4	± 90	50	
411	5	86	08 13 06	± 24	11 49	± 7	4.2	
412	5	86	08 13 24	± 12	02 53	± 5	35	
413	5	86	08 13 48	± 18	15 57	± 5	14	
414	5	86	08 17 36	± 24	11 00	± 7	8.9	
415a	1	100	08 18		42		300	
416	9	81.5	08 21 15	± 15	30 30	± 240	40	
415b	6	960	08 21 20	± 15	42 52	± 4	102 ± 6	
417	5	86	08 21 30	± 12	09 32	± 6	20	
418	5	86	08 22 42	± 24	04 38	± 7	8.8	
419	5	86	08 27 12	± 18	03 15	± 6	27	
420	5	86	08 27 18	± 24	17 39	± 6	14	
421	9	81.5	08 29 30	± 20	29 30	± 300	26	
422	9	81.5	08 31 55	± 15	35 30	± 180	21	
423	5	86	08 32 00	± 18	05 10	± 6	13	
424a	5	86	08 32 18	± 18	07 25	± 6	13	
424b	7	159	08 32 27	± 6	08 23	± 12	8.5 ± 2.0	
425	5	86	08 33 06	± 24	16 04	± 7	8.8	
426	5	86	08 34 18	± 18	01 04	± 7	13	
427a	5	86	08 35 00	± 18	11 27	± 6	18	
428	3	101	08 35	± 80	42	± 20	60	
427b	7	159	08 38 16	± 6	11 39	± 12	13.0 ± 2.5	
429	9	81.5	08 38 51	± 15	23 00	± 240	17	
430	5	86	08 39 36	± 18	17 49	± 6	10	
431	5	86	08 40 18	± 24	09 15	± 7	7	
432	9	81.5	08 42 51	± 20	27 31	± 180	19	
433	5	86	08 43 48	± 18	11 26	± 6	12	
434	5	86	08 44 36	± 24	17 44	± 7	9.4	
435	5	86	08 45 30	± 24	15 33	± 7	6.6	
436	5	86	08 48 24	± 24	10 15	± 7	7.6	
437	5	86	08 51 18	± 12	14 18	± 5	24	
438	7	159	08 52 46	± 2	07 10	± 12	8.5 ± 3.0	
439	5	86	08 53 12	± 18	12 27	± 6	13	
440	5	86	08 53 30	± 18	06 07	± 6	12	
441	5	86	08 54 24	± 30	15 38	± 8	9.4	
442	5	86	08 55 36	± 18	19 38	± 7	17	
443	5	86	08 57 36	± 24	02 05	± 7	7.8	
444	9	81.5	08 59 32	± 10	30 30	± 300	50	
445	5	86	08 59 54	± 18	05 07	± 6	18	
446	5	86	09 00 00	± 18	14 18	± 6	12	
447	5	86	09 01 18	± 18	06 46	± 6	13	
448	5	86	09 03 30	± 18	12 32	± 6	16	
449	5	86	09 06 24	± 24	10 22	± 7	9.5	
450	5	86	09 06 30	± 18	09 38	± 6	17	
451	5	86	09 06 54	± 24	03 15	± 7	7.6	
452	5	86	09 07 00	± 18	01 22	± 7	7.3	
453	9	81.5	09 14 19	± 20	30 30	± 180	33	
454a	7	159	09 15 42	± 3	11 53	± 5	210 ± 32	
454b	5	86	09 15 42	± 6	11 53	± 2	690	
454c	6	960	09 15 43	± 2	11 52.4	± 1	67.2 ± 1.8	
455	3	101	09 20	± 120	11	± 40	250	
456a	3	101	09 20	± 80	30	± 40	80	
456b	9	81.5	09 20 53	± 10	32 30	± 180	33	
457	5	86	09 21 36	± 24	04 22	± 7	9.5	
458	9	81.5	09 26 58	± 15	33 30	± 300	33	
459	5	86	09 30 00	± 18	19 56	± 6	11	
460	5	86	09 31 24	± 18	16 47	± 6	13	
461	9	81.5	09 33 03	± 10	32 00	± 300	56	

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a					Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min		
462	5	86	09 34 54	± 18	04 00	± 6	15	$\times 10^{-26}$
463	3	101	09 35	± 80	19	± 40	150	
464	5	86	09 36 12	± 24	17 18	± 6	15	
465	5	86	09 36 48	± 24	01 17	± 6	12	
466	5	86	09 39 18	± 18	16 09	± 7	10	
467a	7	159	09 39 22	± 5	11 57	± 10	14.5 \pm 5.0	
467b	5	86	09 39 42	± 18	11 28	± 5	50	
468	5	86	09 41 24	± 24	07 14	± 7	8.4	
469	5	86	09 42 00	± 30	09 39	± 8	100	
470	5	86	09 42 42	± 18	19 33	± 6	12	
471	5	86	09 43 30	± 12	13 19	± 5	25	
472	9	81.5	09 43 43	± 10	30 30	± 180	37	
473	5	86	09 47 00	± 24	18 15	± 7	12	
474	5	86	09 48 42	± 18	04 57	± 6	9.3	
475	5	86	09 48 54	± 18	08 31	± 6	12	
476	9	81.5	09 50 55	± 7	25 00	± 180	62	
477	5	86	09 53 18	± 24	12 50	± 7	9.5	
478	5	86	09 54 00	± 18	13 36	± 6	14	
479a	1	100	09 55		5		200	
480	3	101	09 55	± 960	62	± 20	100	
481	9	81.5	10 00 05	± 15	33 00	± 300	32	
482	5	86	10 03 48	± 24	10 38	± 7	7.3	
483	9	81.5	10 04 57	± 30	35 30	± 180	31	
479b	3	101	10 05	± 80	5	± 90	50	
484	5	86	10 05 18	± 12	09 45	± 5	17	
485	5	86	10 07 18	± 18	03 44	± 6	10	
486	5	86	10 07 42	± 18	11 47	± 7	32	
487	5	86	10 08 06	± 18	07 25	± 6	17	
488	5	86	10 08 18	± 18	14 47	± 6	17	
489	3	101	10 10	± 80	42 30	± 20	100	
490	5	86	10 10 06	± 18	18 15	± 6	14	
491	5	86	10 10 18	± 24	15 16	± 7	9.2	
492	5	86	10 11 48	± 24	09 30	± 6	9.4	
493	9	81.5	10 13 20	± 15	32 00	± 180	31	
494	5	86	10 16 54	± 18	02 34	± 6	16	
495	5	86	10 17 42	± 24	03 00	± 7	7.3	
496	5	86	10 18 54	± 18	19 43	± 6	7.5	
497	5	86	10 19 54	± 18	10 25	± 7	6.5	
498	9	81.5	10 19 56	± 20	32 30	± 300	14	
499	5	86	10 22 24	± 18	10 43	± 6	18	
500	9	81.5	10 22 39	± 10	29 14	± 120	31	
501	5	86	10 23 00	± 24	11 44	± 7	8.5	
502	5	86	10 23 06	± 18	08 10	± 6	11	
503	5	86	10 23 36	± 24	18 10	± 6	10	
504	5	86	10 24 06	± 18	02 19	± 6	17	
505	5	86	10 24 18	± 18	04 47	± 7	5.3	
506	5	86	10 25 24	± 18	07 20	± 6	10	
507	5	86	10 27 18	± 12	05 57	± 6	17	
508	9	81.5	10 27 25	± 10	30 00	± 300	25	
509	5	86	10 28 00	± 18	15 28	± 6	18	
510	5	86	10 30 00	± 24	13 36	± 7	7.5	
511	5	86	10 30 06	± 24	09 10	± 7	6.5	
512	5	86	10 31 00	± 24	17 04	± 8	9.0	
513	5	86	10 32 24	± 24	19 15	± 7	11	
514	5	86	10 33 24	± 18	02 29	± 6	16	
515	5	86	10 33 30	± 18	10 20	± 5	9.4	
516	5	86	10 33 42	± 24	06 17	± 7	6.5	
517	5	86	10 34 42	± 18	18 24	± 6	14	
518	9	81.5	10 35 12	± 10	25 52	± 90	41	
519	5	86	10 36 00	± 24	00 53	± 6	8.2	
520	9	81.5	10 38 30	± 10	25 00	± 180	31	
521	5	86	10 38 42	± 24	11 53	± 7	6.5	
522	5	86	10 39 24	± 24	14 00	± 7	9.3	
523	5	86	10 41 54	± 30	08 12	± 7	17	
524	5	86	10 44 42	± 18	01 06	± 6	14	
525	5	86	10 44 48	± 24	17 08	± 7	7.5	
526	9	81.5	10 45 13	± 15	28 00	± 300	17	
527	5	86	10 46 18	± 12	02 33	± 5	20	
528	5	86	10 46 36	± 18	18 46	± 6	24	
529	5	86	10 48 30	± 24	09 19	± 7	8.5	
530	5	86	10 48 42	± 18	20 12	± 6	13	
531a	7	159	10 49 43	± 6	09 11	± 12	8.5 \pm 2.0	

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
532	9	81.5	10 52 59	± 15	52 00	± 240	25 $\times 10^{-26}$
533a	5	86	10 54 36	± 24	16 00	± 7	9.2
531b	5	86	10 59 36	± 24	09 39	± 6	6.5
532a	7	159	10 59 37	± 6	01 00	± 7	14.5 ± 3.5
532b	5	86	10 59 48	± 12	00 52	± 5	25
533b	5	86	11 00 18	± 18	06 18	± 6	15
534	5	86	11 00 36	± 30	15 01	± 10	56
535	5	86	11 03 00	± 24	08 22	± 7	8.5
536	9	81.5	11 03 35	± 20	25 57	± 120	35
537	5	86	11 05 24	± 24	03 55	± 7	5.0
538	5	86	11 09 00	± 18	06 10	± 6	12
539	5	86	11 10 24	± 18	11 50	± 6	10
540	7	159	11 11 01	± 3	02 18	± 11	8.0 ± 2.0
541	5	86	11 11 12	± 18	13 15	± 6	17
542	5	86	11 11 48	± 24	01 54	± 6	18
543	9	81.5	11 12 52	± 30	30 30	± 300	19
544	9	81.5	11 13 05	± 15	26 56	± 120	25
545	5	86	11 13 18	± 18	07 10	± 6	16
546	5	86	11 16 06	± 18	08 43	± 6	15
547	9	81.5	11 16 13	± 15	33 00	± 300	24
548	7	159	11 16 35	± 3	06 23	± 8	15.0 ± 7.5
549	5	86	11 16 54	± 12	02 46	± 5	31
550	5	86	11 19 54	± 18	12 00	± 6	12
551	9	81.5	11 24 33	± 15	33 00	± 300	33
552	5	86	11 25 24	± 24	06 52	± 7	14
553	5	86	11 28 06	± 18	03 15	± 6	10
554	5	86	11 30 24	± 24	15 16	± 6	9.4
555	5	86	11 30 54	± 12	19 22	± 4	32
556	5	86	11 31 24	± 24	07 43	± 7	6.0
557	5	86	11 32 36	± 18	17 25	± 6	19
558	5	86	11 34 12	± 24	00 30	± 7	8.2
559	7	159	11 36 00	± 2	02 23	± 15	10.5 ± 3.0
560	5	86	11 36 30	± 6	13 41	± 4	44
561	5	86	11 39 18	± 24	01 28	± 7	6.3
562	5	86	11 39 48	± 24	17 11	± 6	7.3
563	5	86	11 40 00	± 12	15 08	± 5	25
564	5	86	11 40 18	± 18	11 29	± 6	14
565	5	86	11 41 36	± 18	03 45	± 5	8.4
566	5	86	11 42 36	± 18	15 43	± 6	15
567	5	86	11 42 42	± 30	06 06	± 7	6.0
568	5	86	11 42 54	± 12	00 12	± 5	24
569	5	101	11 45 18	± 8	14	± 40	50
570	5	86	11 46 24	± 18	06 59	± 6	16
571	5	86	11 47 06	± 18	11 47	± 6	17
572	5	86	11 50 24	± 24	10 10	± 7	7.7
573	5	86	11 52 00	± 24	15 22	± 6	6.6
574	5	86	11 53 06	± 18	17 39	± 6	9.5
575	5	86	11 56 12	± 18	00 30	± 6	16
576	5	86	11 56 36	± 24	11 42	± 7	7.3
577	5	86	11 59 30	± 12	18 41	± 6	10
578	5	86	11 59 54	± 18	10 27	± 5	16
579	5	86	12 01 48	± 18	04 36	± 6	11.8
580	5	86	12 01 48	± 18	15 33	± 8	14
581	5	86	12 02 24	± 30	17 39	± 10	48
582	5	86	12 03 42	± 18	07 37	± 7	18
583	5	86	12 04 00	± 18	12 53	± 10	56
584	5	86	12 04 24	± 12	07 27	± 5	9.9
585	5	86	12 05 00	± 18	08 42	± 6	11
586	5	86	12 08 36	± 24	09 38	± 7	11
587	5	86	12 09 06	± 12	10 55	± 5	10
588	5	86	12 09 18	± 18	19 27	± 5	11
589	5	86	12 11 12	± 18	04 36	± 10	9.9
590	5	86	12 11 54	± 18	00 36	± 8	15
591	5	86	12 13 42	± 18	14 39	± 7	6.3
592	5	86	12 15 54	± 18	04 47	± 7	15.7
593	5	86	12 15 54	± 12	09 54	± 7	23
594	5	86	12 16 06	± 12	07 03	± 5	9.2
595	5	86	12 18 12	± 12	16 30	± 5	12
596	5	86	12 22 30	± 18	19 32	± 6	9.0
597	5	86	12 23 24	± 12	11 22	± 6	16
598	9	81.5	12 28 00	± 15	33 00	± 300	37
599	5	86	12 28 24	± 6	16 59	± 4	38

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
600	9	81.5	12 38' 41	± 15	28 00	± 300	27 $\times 10^{-26}$
601	5	86	12 34 00	± 18	14 13	± 7	9.6
602	9	81.5	12 34 10	± 10	22 27	± 90	35
603	5	86	12 35 12	± 18	19 53	± 6	24
604	5	86	12 35 54	± 18	00 31	± 6	8.0
605	5	86	12 37 06	± 30	07 19	± 6	52
606	5	86	12 37 18	± 30	15 38	± 6	14
607	5	86	12 37 42	± 18	04 24	± 6	25
608	5	86	12 39 12	± 12	08 33	± 7	20
609	7	159	12 39 49	± 6	04 39	± 7	18.0 \pm 5.0
610	5	86	12 40 30	± 24	06 07	± 8	12
611	9	81.5	12 41 07	± 15	33 00	± 300	24
612	5	86	12 41 54	± 12	19 36	± 5	18
613	5	86	12 43 06	± 24	03 06	± 6	10
614	5	86	12 43 18	± 18	17 50	± 5	7.0
615	5	86	12 43 36	± 12	11 06	± 5	18
616	5	86	12 44 48	± 18	05 21	± 8	14
617	5	86	12 45 30	± 24	06 12	± 8	17
618	5	86	12 48 00	± 12	01 36	± 6	14
619	9	81.5	12 50 14	± 10	25 48	± 30	28
620	5	86	12 51 36	± 12	18 20	± 7	13
621a	7	159	12 52 00	± 6	12 25	± 6	42 \pm 10
621b	9	960	12 52 00	± 6	12 25	± 6	9.6 \pm 1.5
622	9	81.5	12 52 06	± 15	32 30	± 300	37
621c	5	86	12 52 18	± 6	12 19	± 4	53
623a	7	159	12 53 37	± 3	05 41	± 7	20.5 \pm 5.0
623b	6	960	12 53 37	± 3	05 41	± 7	6.9 \pm 1.2
623c	5	86	12 53 42	± 6	05 38	± 5	37
624	5	86	12 57 00	± 24	17 16	± 6	27
625	5	86	12 57 18	± 12	00 24	± 6	7.5
626	5	86	12 58 06	± 18	11 17	± 5	19
627	9	81.5	12 58 38	± 10	26 02	± 40	22
628	9	81.5	12 59 31	± 10	31 00	± 40	43
629	5	86	13 00 00	± 18	18 03	± 8	18
630	5	86	13 04 12	± 18	05 42	± 8	8.5
631	5	86	13 06 00	± 24	09 49	± 7	19
632	5	86	13 07 18	± 12	00 29	± 5	25
633	9	81.5	13 07 52	± 15	33 00	± 40	16
634	5	86	13 08 18	± 18	12 07	± 7	8.9
635a	6	960	13 08 50	± 18	22 11	± 5	10.2 \pm 1.5
635b	7	159	13 09 12	± 12	21 44	± 16	36 \pm 9
636	5	86	13 09 36	± 12	02 29	± 7	11
637	5	86	13 12 00	± 18	12 07	± 7	8.7
638	5	86	13 12 48	± 24	08 05	± 8	45
639	5	86	13 12 48	± 12	18 41	± 5	22
640	5	86	13 13 00	± 18	06 17	± 6	7.0
641	5	86	13 13 06	± 18	01 25	± 8	16
642	9	81.5	13 13 08	± 15	28 00	± 300	20
643	9	81.5	13 14 48	± 15	33 00	± 40	31
645	5	86	13 16 48	± 24	00 30	± 7	13
644a	9	81.5	13 15 20	± 15	22 32	± 180	12
644b	3	101	13 20	± 480	22	± 130	100
646a	3	101	13 20	± 120	45	± 20	160
647	9	81.5	13 20 12	± 15	33 00	± 40	27
646b	1	100	13 22 27		42 38		1,850
646c	6	960	13 22 28		42 45.6		462 \pm 30
648	9	81.5	13 27 05	± 15	33 00	± 300	45
649	5	86	13 28 24	± 24	06 07	± 6	13
650	5	86	13 31 42	± 36	14 18	± 10	22
651	5	86	13 31 54	± 18	10 00	± 7	18
652	5	86	13 33 48	± 24	07 54	± 7	8.7
653	5	86	13 34 24	± 18	10 57	± 7	17
654	5	86	13 34 42	± 18	17 55	± 6	11
655	5	101	13 35 42	± 480	60 15	± 10	75
656	5	86	13 35 42	± 12	06 21	± 6	35
657	9	81.5	13 37 06	± 10	27 31	± 180	31
658	9	81.5	13 39 57	± 15	33 00	± 40	32
659	5	86	13 41 24	± 24	19 22	± 6	14
660	5	86	13 41 42	± 24	12 21	± 6	18
661	5	86	13 41 48	± 12	03 04	± 7	16
662	5	86	13 43 00	± 18	07 48	± 7	53
663	5	86	13 45 24	± 18	11 07	± 7	15

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a						Intensity, I , watts - m ⁻² - (c/sec) ⁻¹		
			α ,			$\Delta\alpha$,	δ ,			$\Delta\delta$,	
			hr	min	sec	sec	deg	min		min	
664	5	86	13	46	48	± 24	12	58	± 7	14	$\times 10^{-26}$
665	9	81.5	13	47	04	± 15	32	30	± 300	37	
666	5	86	13	47	12	± 24	16	30	± 5	12	
667	5	86	13	48	06	± 18	09	55	± 7	8.0	
668	5	86	13	48	18	± 18	05	36	± 6	12	
669	5	86	13	50	00	± 16	06	07	± 7	7.8	
670	5	86	13	52	06	± 16	19	23	± 5	15	
671	5	86	13	53	24	± 12	08	10	± 10	8.7	
672	5	86	13	53	54	± 12	17	39	± 6	18	
673	9	81.5	13	54	04	± 15	33	00	± 300	26	
674	5	86	13	56	42	± 24	09	57	± 8	8.5	
675	5	86	13	56	48	± 24	16	17	± 7	8.7	
676	9	81.5	13	58	10	± 15	28	00	± 240	12	
677	9	81.5	13	58	24	± 7	22	19	± 180	27	
678	5	86	13	59	06	± 12	11	35	± 5	13	
679	5	86	13	59	54	± 12	14	50	± 9	15	
680	5	86	14	01	18	± 24	19	23	± 7	14	
681	9	81.5	14	03	37	± 15	32	30	± 300	28	
682	5	86	14	04	12	± 12	02	09	± 8	12	
683	5	86	14	05	30	± 12	06	19	± 5	18	
684	5	86	14	06	06	± 12	09	49	± 8	10	
685	5	86	14	06	30	± 18	08	59	± 8	27	
686	5	86	14	09	00	± 12	02	58	± 8	7	
687	5	86	14	09	36	± 12	06	52	± 7	14	
688	5	86	14	09	48	± 24	18	41	± 7	15	
689	9	81.5	14	10	12	± 10	31	00	± 240	21	
690	5	86	14	14	42	± 18	03	50	± 7	24.4	
691	5	86	14	15	18	± 24	17	15	± 10	14	
692	7	159	14	15	30	± 4	03	58	± 9	14.5 \pm 2.5	
693	5	86	14	16	00	± 12	15	47	± 8	34	
694	9	81.5	14	17	30	± 15	25	40	± 120	27	
695	5	86	14	17	42	± 18	19	14	± 8	11	
696	9	81.5	14	17	46	± 15	33	00	± 300	71	
697	5	86	14	19	42	± 18	05	20	± 6	5.0	
698	5	86	14	20	06	± 18	09	09	± 7	16	
699	5	86	14	20	24	± 12	14	29	± 8	26	
700	5	86	14	20	30	± 30	13	14	± 8	12	
701	5	86	14	20	54	± 18	18	20	± 10	9.0	
702	5	86	14	23	24	± 36	08	00	± 7	7.5	
703	5	86	14	23	36	± 24	17	28	± 8	11	
704	9	81.5	14	24	19	± 15	33	00	± 300	50	
705	5	86	14	24	36	± 12	11	44	± 4	22	
706	5	86	14	26	36	± 24	01	18	± 5	25	
707	5	86	14	29	06	± 18	03	38	± 5	16	
708	5	86	14	31	24	± 30	19	13	± 8	8.9	
709	5	86	14	32	00	± 24	12	22	± 6	6.5	
710	5	86	14	32	48	± 24	11	11	± 8	8.5	
711	5	86	14	34	42	± 12	08	21	± 6	14	
712	9	81.5	14	36	17	± 15	26	01	± 120	24	
713	5	86	14	37	12	± 12	17	08	± 8	11	
714	5	86	14	37	24	± 18	06	56	± 5	22	
715	9	81.5	14	41	30	± 10	24	52	± 60	41	
716	5	86	14	41	42	± 12	18	00	± 8	11	
717	5	86	14	42	24	± 24	08	44	± 7	20	
718	5	86	14	42	54	± 12	19	23	± 6	14	
719	5	86	14	43	00	± 18	03	45	± 7	7.6	
720	9	81.5	14	43	58	± 10	26	17	± 60	25	
721	5	86	14	44	06	± 18	11	36	± 7	17	
722	5	86	14	46	54	± 24	15	53	± 6	42	
723	9	81.5	14	48	53	± 10	32	00	± 240	31	
724	9	81.5	14	49	56	± 10	25	57	± 60	19	
725	5	86	14	50	12	± 18	12	58	± 6	19	
726	5	86	14	51	42	± 18	18	30	± 7	9.3	
727	5	86	14	52	42	± 12	04	10	± 6	22	
728	5	86	14	53	24	± 12	11	02	± 5	41	
729	5	86	14	53	30	± 12	05	44	± 5	16	
730	5	86	14	55	30	± 18	00	54	± 7	19	
731	9	81.5	14	59	11	± 15	26	28	± 120	27	
732	5	86	14	59	18	± 18	16	10	± 7	10	
733	5	86	15	00	18	± 12	14	41	± 7	13	
734	9	81.5	15	01	00	± 20	33	00	± 300	41	
735	5	86	15	02	36	± 18	00	18	± 13	18	

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I , watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
736	5	86	15 02 42	± 12	12 00	± 10	9.3 $\times 10^{-26}$
737	5	86	15 03 18	± 18	16 36	± 8	10
738	9	81.5	15 04 06	± 15	33 00	± 300	28
739	5	86	15 04 18	± 12	06 41	± 6	17
740	5	86	15 04 30	± 12	13 52	± 7	13
741	5	86	15 08 06	± 18	18 05	± 8	15
742	5	86	15 08 18	± 18	00 42	± 6	19
743	5	86	15 09 00	± 12	09 17	± 5	18
744	5	86	15 09 00	± 24	05 26	± 6	8
745	5	86	15 09 12	± 18	08 15	± 7	7.5
746	5	86	15 10 36	± 30	19 23	± 6	49
747	9	81.5	15 13 27	± 15	33 00	± 300	41
748	5	86	15 14 06	± 18	13 58	± 7	19
749	5	86	15 16 36	± 12	12 32	± 6	13
750	9	81.5	15 16 51	± 15	34 00	± 240	31
751	5	86	15 20 24	± 18	05 12	± 7	14
752	5	86	15 21 48	± 24	06 52	± 7	12
753	5	86	15 21 54	± 24	03 13	± 6	7.0
754	5	86	15 22 06	± 18	07 28	± 7	18
755	5	86	15 22 54	± 18	08 17	± 6	12
756	5	86	15 23 30	± 12	13 41	± 4	16
757	9	81.5	15 26 19	± 15	32 00	± 240	40
758	5	86	15 27 06	± 18	12 21	± 6	8.2
759	5	86	15 31 30	± 18	18 36	± 8	13
760	9	81.5	15 33 30	± 20	27 12	± 60	27
761	5	86	15 37 48	± 12	17 23	± 7	16
762	5	86	15 38 06	± 30	01 54	± 6	37
763	5	86	15 39 00	± 18	04 59	± 7	12
764	5	86	15 40 54	± 30	16 02	± 8	7.5
765	5	86	15 41 18	± 18	13 36	± 10	8.8
766	5	86	15 42 30	± 18	03 41	± 9	23
767	5	86	15 43 54	± 12	12 23	± 7	9.5
768	5	86	15 45 18	± 30	07 20	± 9	14.8
769	5	86	15 46 00	± 12	07 55	± 8	12
770	5	86	15 48 36	± 12	19 51	± 5	11
771	9	81.5	15 49 47	± 15	31 00	± 300	47
772	5	86	15 50 00	± 18	16 57	± 10	21
773	5	86	15 51 48	± 30	02 52	± 5	9.7
774	5	86	15 52 24	± 12	06 57	± 8	19
775	9	81.5	15 53 12	± 15	34 00	± 300	53
776	5	86	15 53 18	± 18	16 10	± 7	10
777	5	86	15 53 24	± 24	09 05	± 7	10
778	5	86	15 57 18	± 18	04 38	± 7	7.0
779	9	81.5	15 57 34	± 10	36 00	± 240	66
780	5	86	16 02 42	± 18	09 15	± 6	20
781	5	86	16 03 12	± 18	17 19	± 6	16
782	5	86	16 04 06	± 18	18 20	± 10	7.6
783	9	81.5	16 04 13	± 10	22 56	± 40	19
784	5	86	16 05 30	± 18	16 18	± 8	8.5
785	5	86	16 05 48	± 18	06 36	± 6	9.5
786	5	86	16 07 42	± 18	12 45	± 7	15
787	5	86	16 08 06	± 24	10 44	± 7	11
788	9	81.5	16 08 59	± 10	31 00	± 240	21
789	5	101	16 10	± 480	60 45	± 10	850
790	5	86	16 12 18	± 12	02 30	± 4	9.1
791	5	86	16 12 24	± 12	00 35	± 5	15
792a	5	86	16 14 00	± 18	05 44	± 7	9.5
793a	9	81.5	16 14 58	± 10	22 34	± 60	28
792b	5	101	16 15	± 240	5	± 90	200
793b	5	86	16 16 00	± 18	08 42	± 7	8.0
794	5	86	16 16 54	± 24	10 05	± 7	17
795	5	86	16 17 36	± 18	13 36	± 6	12
796	5	86	16 21 06	± 18	11 28	± 4	20
797	5	86	16 22 00	± 18	17 34	± 7	15
798	5	86	16 22 48	± 30	19 23	± 5	11
799	5	86	16 26 24	± 24	06 20	± 6	9.0
800	5	86	16 26 36	± 24	03 24	± 6	17
801	9	81.5	16 28 56	± 10	26 29	± 30	38
802	5	86	16 30 24	± 12	12 48	± 6	15
803	5	86	16 32 36	± 30	15 18	± 9	14
804	9	81.5	16 33 08	± 15	23 44	± 120	20
805	5	86	16 34 06	± 18	03 33	± 8	12

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
806	5	86	16 54 54	± 18	14 18	± 7	16 $\times 10^{-26}$
807	5	86	16 56 54	± 30	00 30	± 6	26
808	5	86	16 56 54	± 30	12 53	± 7	8.9
809	5	86	16 58 00	± 12	19 35	± 6	23
810	5	86	16 58 06	± 30	17 50	± 10	19
811	5	86	16 40 24	± 18	15 19	± 5	30
812	5	86	16 42 42	± 12	07 14	± 7	21
813	5	86	16 43 06	± 24	18 20	± 6	18
814	5	86	16 45 24	± 12	10 48	± 6	37
815	9	81.5	16 45 56	± 15	34 00	± 300	30
816	9	81.5	16 46 26	± 15	23 44	± 180	12
817	5	86	16 48 06	± 18	12 53	± 7	14
818	5	86	16 49 18	± 24	00 18	± 6	80
819	5	86	16 52 00	± 24	05 09	± 6	11
820	5	86	16 52 36	± 12	02 17	± 9	60
821	9	81.5	16 52 44	± 15	26 00	± 300	12
822	9	81.5	16 53 18	± 15	33 00	± 300	30
823	5	86	16 54 36	± 18	09 08	± 6	11
824	5	86	16 55 30	± 24	18 51	± 8	17
825	5	86	16 55 42	± 18	14 03	± 5	22
826	5	86	16 56 00	± 18	01 11	± 7	15
827	5	86	17 05 12	± 18	10 02	± 6	15
828	5	86	17 05 24	± 18	17 13	± 6	60
829	9	81.5	17 05 24	± 10	30 00	± 300	68
830	5	86	17 05 48	± 24	01 36	± 6	17
831	5	86	17 06 12	± 18	04 41	± 5	12
832	5	86	17 09 42	± 18	00 26	± 7	15
833	5	86	17 10 30	± 30	13 41	± 8	32
834	5	86	17 12 30	± 24	03 16	± 7	21
835	5	86	17 15 00	± 42	12 43	± 7	16
836	5	86	17 15 54	± 24	16 25	± 7	15
837	5	86	17 16 54	± 18	04 25	± 8	31
838a	7	159	17 17 58	± 3	00 52	± 6	180 ± 40
838b	6	960	17 17 59	± 3	00 55.5	± 1.5	83.7 ± 1.8
838c	5	86	17 18 06	± 6	00 55	± 3	475
839a	5	86	17 19 24	± 30	18 45	± 7	150
839b	6	960	17 19 24	± 30	18 45	± 7	5.1 ± 1.8
840	3	101	17 20	± 240	39	± 20	400
841	5	86	17 22 06	± 18	03 50	± 9	16
842	5	86	17 22 18	± 24	10 49	± 8	21
843	5	86	17 24 36	± 24	08 21	± 7	15
844a	7	159	17 27 47	± 5	21 16	± 10	58 ± 12
844b	6	960	17 27 47	± 5	21 16	± 10	19.5 ± 2.1
845	5	86	17 30 54	± 12	05 10	± 7	16
846	9	81.5	17 31 35	± 15	28 00	± 240	37
847	7	159	17 33 23	± 5	08 26	± 11	14.5 ± 3.5
848	5	86	17 33 42	± 18	06 52	± 8	19
849	9	81.5	17 36 28	± 15	33 00	± 240	153
850	5	86	17 37 06	± 24	11 40	± 6	16
851	5	86	17 37 42	± 24	01 18	± 8	39
852	5	86	17 47 42	± 24	13 04	± 9	18
853	5	86	17 48 06	± 18	02 06	± 8	53
854	5	86	17 48 42	± 24	17 28	± 8	30
855	5	86	17 51 06	± 18	14 56	± 9	19
856	5	86	17 51 18	± 30	10 43	± 8	16
857	5	86	17 53 48	± 24	08 10	± 8	21
858	5	86	17 53 54	± 18	11 39	± 6	12
859	5	86	17 54 24	± 18	05 34	± 6	55
860a	3	101	17 55	± 480	23	± 40	150
860b	9	81.5	18 00 44	± 10	22 14	± 40	155
861	3	101	17 55	± 240	29	± 20	300
862	5	86	17 55 24	± 18	16 07	± 7	24
863	5	86	17 55 42	± 12	01 24	± 6	50
864	5	86	18 00 06	± 30	17 49	± 7	40
865	5	86	18 02 24	± 18	05 19	± 7	25
866	5	86	18 04 42	± 30	11 26	± 7	29
867	5	86	18 05 12	± 18	00 59	± 8	62
868	9	81.5	18 05 28	± 15	33 30	± 180	35
869a	3	101	18 10	± 240	6	± 90	250
870a	1	100	18 11		15		200
870b	5	86	18 11 36	± 12	17 12	± 3	160
871	5	86	18 12 00	± 24	12 40	± 10	20

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
869b	5	86	18 12 24	± 18	05 59	± 7	82 $\times 10^{-26}$
872	5	86	18 14 54	± 18	07 03	± 8	30
873	5	86	18 14 54	± 18	10 57	± 7	35
874	9	81.5	18 17 19	± 10	24 15	± 60	27
875	5	86	18 17 36	± 4	09 32	± 5	50
876	9	81.5	18 17 39	± 20	31 00	± 240	57
877	5	86	18 18 54	± 30	18 38	± 10	15
878	7	159	18 20 17	± 5	02 10	± 10	12.0 ± 2.5
879	5	86	18 20 36	± 12	01 34	± 6	76
880	5	86	18 21 30	± 18	13 50	± 5	40
881	5	86	18 21 48	± 18	12 24	± 4	150
882	5	86	18 25 00	± 18	11 17	± 4	50
883	5	86	18 25 18	± 18	04 38	± 8	40
884	9	81.5	18 25 39	± 15	32 00	± 240	52
885	5	86	18 26 30	± 18	17 54	± 7	15
886	5	86	18 27 30	± 18	12 46	± 6	40
887	5	86	18 28 42	± 24	14 36	± 8	30
888	5	86	18 30 06	± 12	10 01	± 4	230
889	5	86	18 31 36	± 12	08 42	± 10	160
890	9	81.5	18 34 36	± 15	27 01	± 180	42
891	7	159	18 35 16	± 5	07 01	± 11	17.0 ± 3.5
892a	7	159	18 37 52	± 3	05 19	± 10	22.0 ± 5.0
892b	5	86	18 37 30	± 12	05 10	± 6	20
893	5	86	18 41 42	± 24	03 51	± 5	180
894	5	86	18 41 48	± 30	01 48	± 10	25
895	5	86	18 42 06	± 24	19 40	± 8	56
896	5	86	18 42 54	± 24	13 37	± 8	24
897	7	159	18 42 56	± 5	03 23	± 12	17.0 ± 6.0
898	9	81.5	18 45 01	± 10	25 51	± 60	33
899a	5	86	18 46 18	± 24	00 53	± 8	20
899b	7	159	18 46 47	± 5	00 59	± 6	27 ± 6
900	5	86	18 48 54	± 24	10 55	± 7	23
901	5	86	18 50 18	± 24	07 48	± 8	17
902	5	86	18 51 06	± 18	17 08	± 7	15
903	9	81.5	18 52 27	± 7	22 00	± 240	36
904	5	86	18 53 00	± 24	02 42	± 7	150
905	9	81.5	18 54 11	± 8	25 53	± 120	31
906	5	86	18 57 54	± 18	04 13	± 5	34
907	9	81.5	18 59 29	± 10	24 36	± 120	40
908	5	86	19 04 12	± 24	03 06	± 7	53
909	5	86	19 04 54	± 30	19 01	± 9	20
910	9	81.5	19 05 42	± 10	25 00	± 60	37
911	5	86	19 05 48	± 18	12 37	± 5	17
912	9	81.5	19 07 05	± 15	33 00	± 300	32
913	5	86	19 08 54	± 18	06 41	± 7	16
914	5	86	19 11 18	± 18	09 41	± 7	15
915	5	86	19 11 18	± 18	15 11	± 6	17
916	5	86	19 14 06	± 30	02 17	± 7	28
917	5	86	19 14 42	± 18	16 30	± 8	12
918	5	86	19 14 54	± 12	11 58	± 6	25
919	5	86	19 18 30	± 18	05 33	± 8	9.8
920	5	86	19 20 00	± 36	03 38	± 7	16
921	5	86	19 24 06	± 30	14 18	± 9	28
922	5	86	19 26 12	± 30	02 05	± 5	23
923	5	86	19 27 06	± 12	15 19	± 6	23
924	5	86	19 28 06	± 18	06 41	± 6	12
925	5	86	19 29 30	± 12	19 44	± 7	22
926	5	86	19 31 42	± 18	17 18	± 8	12
927	5	86	19 32 12	± 24	10 55	± 7	75
928	5	86	19 32 36	± 18	09 46	± 8	23
929	5	86	19 37 42	± 12	15 36	± 4	38
930	5	86	19 39 42	± 18	13 26	± 7	13
931	5	86	19 39 48	± 18	04 36	± 8	12
932	5	101	19 40 48	± 8	50	± 40	50
933	5	86	19 40 48	± 30	07 29	± 6	33
934	5	86	19 42 54	± 24	04 55	± 8	20
935	5	86	19 43 30	± 12	02 45	± 6	22
936	5	86	19 44 48	± 24	00 13	± 7	22
937	5	86	19 45 48	± 24	08 54	± 8	9.5
938	5	86	19 48 54	± 18	14 08	± 8	15
939	5	86	19 49 54	± 18	18 10	± 7	11

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a						Intensity, I, watts - m ⁻² - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min			
940	5	86	19 50 36	± 24	19 43	± 7	18	$\times 10^{-26}$	
941	7	159	19 52 45	± 5	07 29	± 10	14.0 \pm 2.5		
942	5	86	19 53 18	± 18	05 22	± 8	10		
943	5	86	19 53 18	± 24	12 30	± 7	19		
944	5	86	19 54 06	± 18	16 30	± 6	9.2		
945	5	86	20 04 06	± 18	19 32	± 8	15		
946a	7	159	20 05 45	± 5	04 26	± 10	11.5 \pm 3.0		
946b	5	86	20 06 24	± 18	04 25	± 7	19		
947	9	81.5	20 07 06	± 15	32 30	± 300	40		
948	5	86	20 08 12	± 18	16 14	± 8	8.3		
949	5	86	20 09 42	± 18	09 00	± 7	9.5		
950	9	81.5	20 17 04	± 15	30 30	± 300	25		
951	5	86	20 18 42	± 24	09 38	± 7	9.0		
952	9	81.5	20 19 52	± 15	27 30	± 300	21		
953	3	101	20 20	± 960	06	± 90	100		
954	5	86	20 21 18	± 18	17 38	± 8	8.5		
955	5	86	20 21 54	± 18	13 56	± 9	6.7		
956	5	86	20 22 24	± 24	19 43	± 7	8.8		
957	5	86	20 23 12	± 24	01 18	± 7	14		
958	5	86	20 25 30	± 12	15 41	± 4	20		
959	9	81.5	20 26 44	± 10	29 30	± 180	33		
960	5	86	20 27 00	± 24	00 47	± 7	8.7		
961a	7	159	20 28 27	± 8	07 25	± 15	8.5 \pm 2.0		
961b	5	86	20 28 36	± 12	08 09	± 7	14		
962	9	81.5	20 30 03	± 15	24 54	± 120	14		
963	9	81.5	20 32 10	± 15	32 30	± 300	41		
964	5	86	20 33 12	± 18	17 54	± 6	15		
965	5	86	20 33 30	± 12	09 27	± 8	14		
966	5	86	20 36 30	± 24	13 47	± 7	13		
967	5	86	20 37 30	± 18	02 54	± 7	9.7		
968	9	81.5	20 39 44	± 10	26 27	± 60	20		
969	5	86	20 40 54	± 24	15 00	± 8	9.0		
970	5	86	20 43 00	± 24	10 12	± 10	8.0		
971a	5	86	20 44 06	± 18	02 17	± 7	18		
972	9	81.5	20 44 32	± 15	32 30	± 300	41		
971b	7	159	20 44 37	± 4	02 31	± 10	9.5 \pm 2.5		
973	5	86	20 45 00	± 18	07 59	± 8	9.0		
974	5	86	20 45 00	± 18	18 20	± 7	15		
975	5	86	20 45 06	± 18	03 15	± 7	27		
976	5	86	20 48 30	± 18	14 45	± 7	13		
977	5	86	20 48 48	± 24	16 15	± 9	17		
978	5	86	20 50 12	± 18	16 23	± 7	13		
979	5	86	20 50 18	± 18	18 41	± 7	9.0		
980	5	86	20 53 12	± 24	06 52	± 8	15		
981	5	86	20 53 30	± 18	12 22	± 7	8.5		
982	9	81.5	20 56 22	± 15	30 30	± 240	87		
983	5	86	20 56 48	± 12	15 00	± 6	13		
984	5	86	20 58 12	± 18	17 48	± 6	24		
985	5	86	20 58 48	± 24	08 49	± 7	17		
986	5	86	20 59 42	± 18	13 20	± 7	14		
987	3	101	21 00	± 8	31	± 40	80		
988	3	101	21 00	± 16	71	± 20	200		
989	5	86	21 00 12	± 18	09 45	± 6	12		
990	5	86	21 00 54	± 18	04 02	± 7	19		
991	5	86	21 01 24	± 12	10 44	± 5	14		
992	5	86	21 02 06	± 18	00 30	± 7	11		
993	5	86	21 03 24	± 12	11 28	± 6	12		
994	5	86	21 05 24	± 18	07 06	± 5	17		
995	9	81.5	21 05 40	± 7	27 37	± 120	72		
996	5	86	21 07 18	± 18	13 25	± 8	10		
997	5	86	21 10 30	± 18	09 50	± 7	11		
998	9	81.5	21 12 51	± 15	32 30	± 240	38		
999	5	86	21 13 42	± 18	02 47	± 10	28		
1,000	5	86	21 15 18	± 18	16 03	± 7	9.3		
1,001	5	86	21 15 48	± 24	14 08	± 7	14		
1,002	5	86	21 17 00	± 18	12 02	± 6	7.1		
1,003	5	86	21 17 42	± 12	15 16	± 7	17		
1,004	9	81.5	21 18 26	± 20	31 30	± 240	38		
1,005	5	86	21 19 06	± 18	18 40	± 8	9.7		
1,006	5	86	21 20 12	± 24	16 49	± 7	30		
1,007	9	81.5	12 23 45	± 15	35 30	± 180	19		
1,008	5	86	21 24 30	± 24	19 27	± 8	8.2		
1,009	9	81.5	21 24 38	± 7	23 38	± 120	14		

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Continued

(b) Southern hemisphere - Continued

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a				Intensity, I, watts - m^{-2} - (c/sec) ⁻¹
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min	
1,010	5	86	21 24 54	± 18	05 35	± 8	19 $\times 10^{-26}$
1,011	5	86	21 25 00	± 24	06 36	± 6	10
1,012	5	101	21 25 00	± 180	41	± 40	50
1,013	5	86	21 25 42	± 30	00 59	± 7	15
1,014	5	86	21 26 00	± 18	14 37	± 7	8.4
1,015	5	86	21 28 06	± 30	09 15	± 7	16
1,016	5	86	21 31 54	± 18	02 28	± 6	9.0
1,017	5	86	21 31 36	± 18	01 16	± 6	6
1,018	5	86	21 32 42	± 18	13 09	± 7	15
1,019	5	86	21 33 18	± 12	11 39	± 6	28
1,020	5	86	21 34 42	± 12	14 39	± 5	33
1,021	5	86	21 35 12	± 18	18 54	± 7	23
1,022	9	81.5	21 35 28	± 10	29 30	± 180	22
1,023	5	86	21 38 00	± 24	07 02	± 8	12
1,024	5	86	21 38 12	± 18	16 35	± 6	16
1,025	5	86	21 40 36	± 24	09 14	± 7	7.0
1,026	5	86	21 41 42	± 18	04 02	± 8	12
1,027	5	86	21 43 48	± 18	08 10	± 7	13
1,028	9	81.5	21 44 24	± 7	25 14	± 60	30
1,029	5	86	21 46 12	± 18	17 07	± 8	13
1,030	5	86	21 46 54	± 24	13 36	± 7	2.5
1,031	9	81.5	21 48 39	± 15	30 30	± 300	26
1,032	5	86	21 48 42	± 18	15 54	± 7	8.8
1,033	5	86	21 48 54	± 18	19 53	± 7	18
1,034	5	86	21 50 42	± 18	03 40	± 7	6.0
1,035	5	86	21 53 42	± 12	12 53	± 7	8.8
1,036	5	86	21 54 12	± 18	01 29	± 8	15.6
1,037	5	86	21 54 12	± 12	18 25	± 6	25
1,038	3	101	21 55 00	± 240	24	± 40	80
1,039	5	86	21 56 18	± 18	05 55	± 8	11
1,040	5	86	21 57 42	± 18	03 55	± 8	13
1,041	5	86	21 58 12	± 12	17 04	± 5	14
1,042	5	86	21 58 30	± 24	13 30	± 6	12
1,043	3	101	22 00 00	± 6	54	± 40	50
1,044	5	86	22 02 12	± 18	08 43	± 8	11
1,045	9	81.5	22 02 14	± 15	27 30	± 300	38
1,045	5	86	22 03 00	± 12	18 40	± 5	16
1,046	5	86	22 03 24	± 18	15 33	± 10	6.7
1,047	5	86	22 04 36	± 12	09 16	± 5	10
1,048	5	86	22 05 24	± 12	05 30	± 6	7
1,049	5	86	22 05 42	± 18	05 27	± 8	13
1,050	5	86	22 07 42	± 18	14 13	± 5	10
1,051	5	86	22 08 30	± 18	10 12	± 6	9.5
1,052	5	86	22 08 30	± 18	12 58	± 7	14
1,053	5	86	22 10 18	± 18	11 58	± 6	16
1,054	5	86	22 10 48	± 12	09 29	± 5	17
1,055a	7	159	22 11 48	± 6	17 27	± 6	49 ± 10
1,055b	8	169	22 11 48.5	± 2	16 10	± 20	40
1,055c	5	86	22 12 00	± 6	17 11	± 4	127
1,056	5	86	22 16 18	± 18	03 46	± 6	33
1,057	5	86	22 16 54	± 18	00 42	± 9	13
1,058	5	86	22 19 24	± 24	08 43	± 10	7.1
1,059	9	81.5	22 19 28	± 10	29 30	± 240	28
1,060a	7	159	22 20 31	± 5	02 18	± 5	20.5 ± 6.0
1,061	5	86	22 21 24	± 18	15 43	± 6	10
1,060b	5	86	22 21 30	± 6	02 18	± 3	60
1,062	5	86	22 22 36	± 18	14 08	± 6	15
1,063	5	86	22 23 00	± 12	16 46	± 6	15
1,064a	7	159	22 23 04	± 5	05 24	± 8	33 ± 10
1,064b	5	86	22 23 06	± 18	05 13	± 5	30
1,065	9	81.5	22 24 19	± 15	32 30	± 300	32
1,066	5	86	22 24 30	± 18	03 39	± 8	9.6
1,067	5	86	22 27 06	± 18	18 51	± 7	11
1,068	5	86	22 28 00	± 18	10 23	± 8	6.5
1,069	5	86	22 29 12	± 24	08 33	± 6	15
1,070	5	86	22 33 18	± 18	07 03	± 8	8.0
1,071	5	86	22 34 54	± 12	13 56	± 6	10
1,072	5	86	22 35 24	± 12	12 03	± 7	16
1,073	5	86	22 35 48	± 12	17 36	± 6	17
1,074	5	86	22 36 42	± 18	19 33	± 7	17
1,075	5	86	22 36 54	± 18	04 13	± 6	16
1,076	5	86	22 39 54	± 24	14 56	± 7	6.0
1,077	5	86	22 40 36	± 24	16 36	± 7	8

^a α , right ascension; δ , declination.

TABLE II.- POSITIONS AND INTENSITIES OF DISCRETE RADIO SOURCES - Concluded

(b) Southern hemisphere - Concluded

Source	Survey	Frequency, ν , mc/sec	Position (1950 epoch) ^a					Intensity, I, watts - m ⁻² - (c/sec)-1
			α , hr min sec	$\Delta\alpha$, sec	δ , deg min	$\Delta\delta$, min		
1,078	5	86	22 43 30	± 24	02 10	± 7	14×10^{-26}	
1,079	5	86	22 43 42	± 12	19 02	± 5	8.0	
1,080	5	86	22 45 00	± 18	02 52	± 7	20	
1,081	5	86	22 45 12	± 24	03 25	± 8	9	
1,082	5	86	22 53 06	± 30	06 37	± 8	12	
1,083	5	86	22 53 54	± 30	00 18	± 6	32	
1,084	5	86	22 54 54	± 12	01 16	± 6	6.6	
1,085	5	86	22 55 18	± 18	08 32	± 8	13	
1,086	5	86	22 56 00	± 12	12 11	± 6	8.6	
1,087	5	86	22 56 54	± 18	15 12	± 8	12	
1,088	5	86	22 57 24	± 18	13 35	± 8	6.7	
1,089	5	86	22 58 00	± 30	10 28	± 8	8.0	
1,090	5	86	23 01 42	± 24	02 17	± 8	7	
1,091	5	86	23 02 36	± 18	05 27	± 6	10	
1,092	5	86	23 02 48	± 24	01 00	± 8	9.5	
1,093	9	81.5	23 03 28	± 15	22 32	± 300	16	
1,094	5	86	23 03 36	± 18	03 43	± 6	14	
1,095	5	86	23 04 48	± 24	12 01	± 7	8.6	
1,096	5	86	23 05 30	± 18	07 59	± 7	6.7	
1,097	5	86	23 06 30	± 18	19 53	± 7	11	
1,098	5	86	23 07 30	± 24	09 22	± 8	9.0	
1,099	5	86	23 07 42	± 18	10 45	± 7	7.6	
1,100	9	81.5	23 08 56	± 15	32 30	± 300	37	
1,101	9	81.5	23 09 27	± 15	24 53	± 120	33	
1,102	5	86	23 09 36	± 18	12 54	± 6	11	
1,103	5	86	23 12 36	± 18	05 57	± 6	6.7	
1,104	5	86	23 13 54	± 18	14 18	± 7	9.6	
1,105	5	86	23 14 06	± 18	12 10	± 6	8.6	
1,106	5	86	23 15 36	± 18	02 29	± 7	9.8	
1,107	5	86	23 15 54	± 30	11 07	± 7	6.9	
1,108	9	81.5	23 16 32	± 10	26 27	± 30	46	
1,109	5	86	23 17 36	± 18	16 30	± 5	23	
1,110	5	86	23 18 06	± 18	19 52	± 6	15	
1,111	5	86	23 18 30	± 18	13 36	± 8	7.4	
1,112	9	81.5	23 19 20	± 15	27 22	± 120	20	
1,113	5	86	23 19 30	± 12	09 16	± 5	6.0	
1,114	5	86	23 20 06	± 24	15 33	± 8	10	
1,115	5	86	23 22 36	± 12	12 29	± 5	30	
1,116	9	81.5	23 24 17	± 7	23 08	± 300	31	
1,117	5	86	23 24 18	± 18	05 15	± 6	35	
1,118	5	86	23 25 06	± 18	02 22	± 6	19	
1,119	5	86	23 25 12	± 24	08 10	± 8	9.0	
1,120	5	86	23 25 18	± 18	15 02	± 7	14	
1,121	9	81.5	23 26 01	± 15	32 30	± 300	27	
1,122	9	81.5	23 26 37	± 20	25 21	± 40	31	
1,123	5	86	23 26 42	± 12	19 37	± 5	19	
1,124	5	86	23 27 18	± 12	17 56	± 6	11	
1,125	5	86	23 27 36	± 12	18 47	± 6	13	
1,126	5	86	23 29 12	± 24	16 51	± 6	10	
1,127	5	86	23 30 00	± 18	10 16	± 7	10	
1,128	5	86	23 32 42	± 18	04 59	± 5	9.7	
1,129	5	86	23 33 24	± 30	00 19	± 5	9.5	
1,130	5	86	23 34 54	± 18	14 52	± 6	16	
1,131	9	81.5	23 36 21	± 10	30 30	± 180	43	
1,132	5	86	23 38 00	± 18	00 08	± 6	11	
1,133	5	86	23 39 30	± 24	12 51	± 7	6.9	
1,134	5	86	23 39 42	± 18	16 46	± 6	16	
1,135	5	86	23 42 30	± 18	05 22	± 7	7.6	
1,136	5	86	23 42 54	± 24	15 22	± 8	13	
1,137	9	81.5	23 43 54	± 12	27 46	± 120	50	
1,138	5	86	23 46 06	± 18	03 36	± 8	8.6	
1,139	9	81.5	23 47 59	± 15	27 31	± 180	25	
1,140	5	86	23 48 06	± 24	16 25	± 6	13	
1,141	9	81.5	23 48 23	± 15	32 30	± 300	32	
1,142	5	86	23 48 42	± 18	04 21	± 8	13	
1,143	5	86	23 49 42	± 18	08 10	± 7	10	
1,144	5	86	23 49 54	± 18	01 23	± 7	18	
1,145	5	86	23 51 18	± 18	05 30	± 7	9	
1,146	9	81.5	23 53 57	± 7	23 58	± 120	24	
1,147	5	86	23 54 30	± 18	13 20	± 8	8.3	
1,148	9	81.5	23 54 55	± 15	30 30	± 180	31	
1,149	9	81.5	23 58 32	± 5	33 45	± 250	62	
1,150	5	86	23 59 36	± 12	17 26	± 6	14	

^a α , right ascension; δ , declination.

TABLE III.- THERMAL RADIATION FROM VENUS, JUPITER, AND MARS

Planet	Wavelength, λ , meter	Frequency, ν , mc/sec	Flux, watts - m^{-2} - $(c/sec)^{-1}$	Disk temp., T_d , $^{\circ}K$	Time	Reference
Venus	0.0315		3.8×10^{-25}	620 ± 110	Early May 1956	47
	.0315		9.6×10^{-25}	560 ± 73	Inferior conj. ^a 1956	47
	.0337			575	April 1958	50
	.094			580 ± 230	June 25 and July 7, 1956	47
	.0086			410	Inferior conj. ^a 1958	48
Jupiter	0.0315		9.5×10^{-26}	140 ± 56	May 1956	44, 46
	.0315		1.4×10^{-25}	145 ± 26	March 1957	44, 46
	.0337			165 ± 17		52
	.0375			210		45
	.103	2,910	$(.27 \text{ to } .62) \times 10^{-25}$	395 to 860	June 1958	49
	.103 to .102			640 ± 85	June - August 1958	54
Mars	.103 to .102			315 ± 65	October 1959	54
	0.0315		6.5×10^{-26}	218 ± 76	September 1956	44, 46

^aAt inferior conjunction, the dark side of Venus faces the Earth.

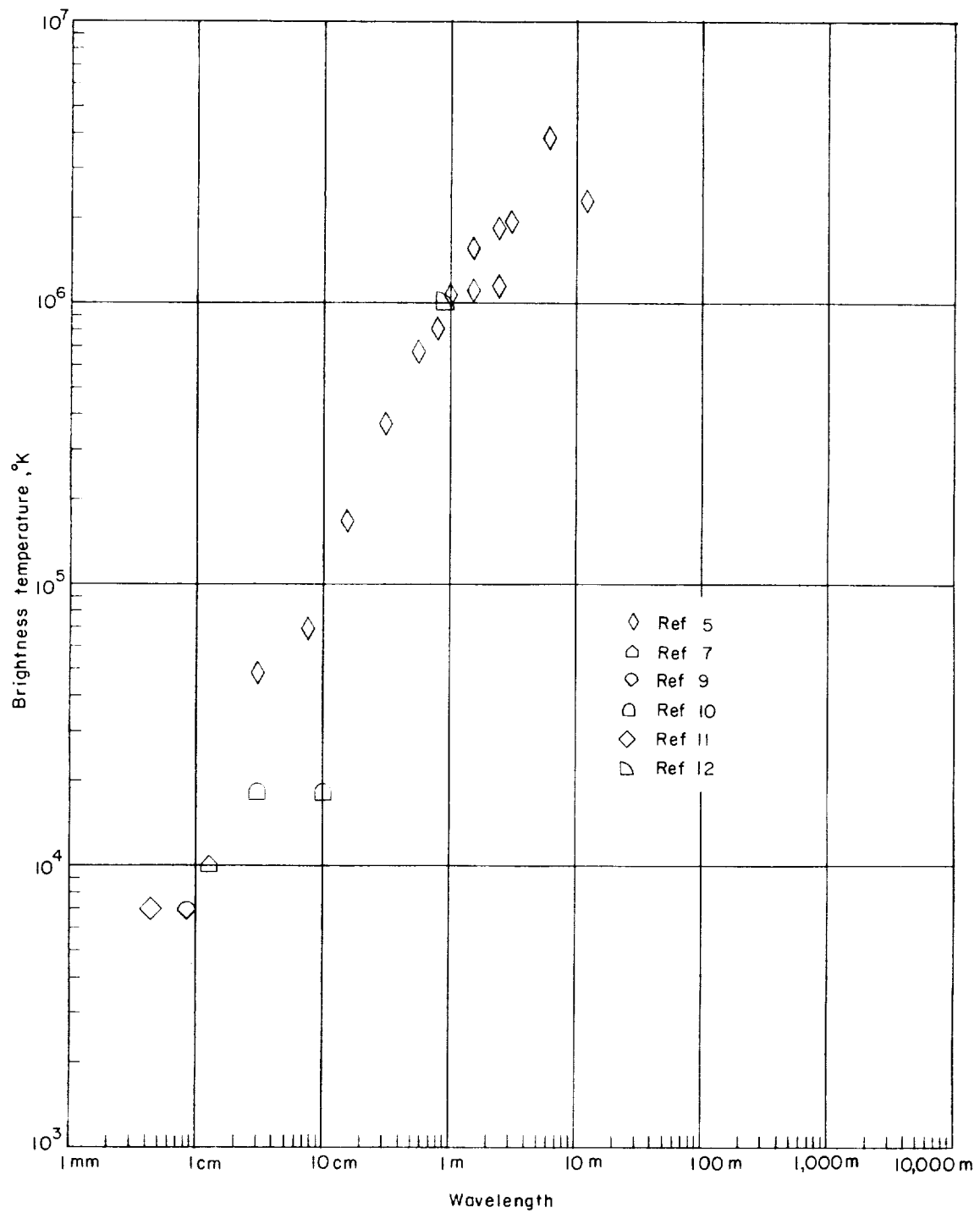


Figure 1.- Brightness temperature of the solar disk at various wavelengths according to several observers.

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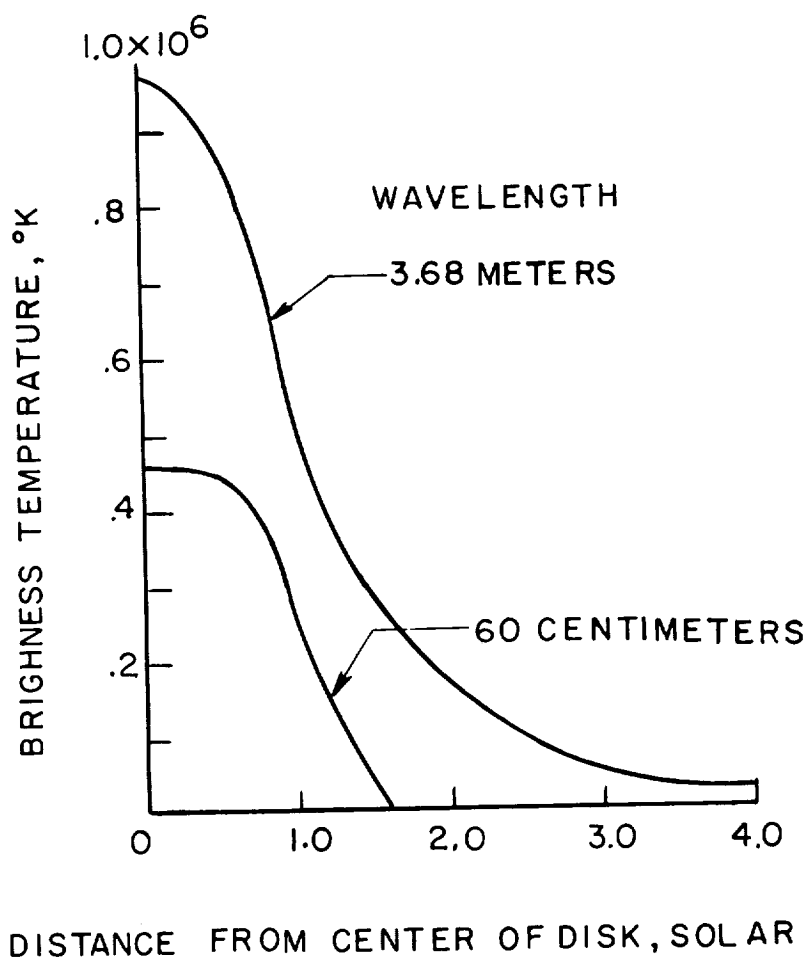


Figure 2.- Brightness-temperature distribution across the solar disk at wavelengths of 60 centimeters and 3.68 meters. Stanier (ref. 14) and Machin (ref. 15).

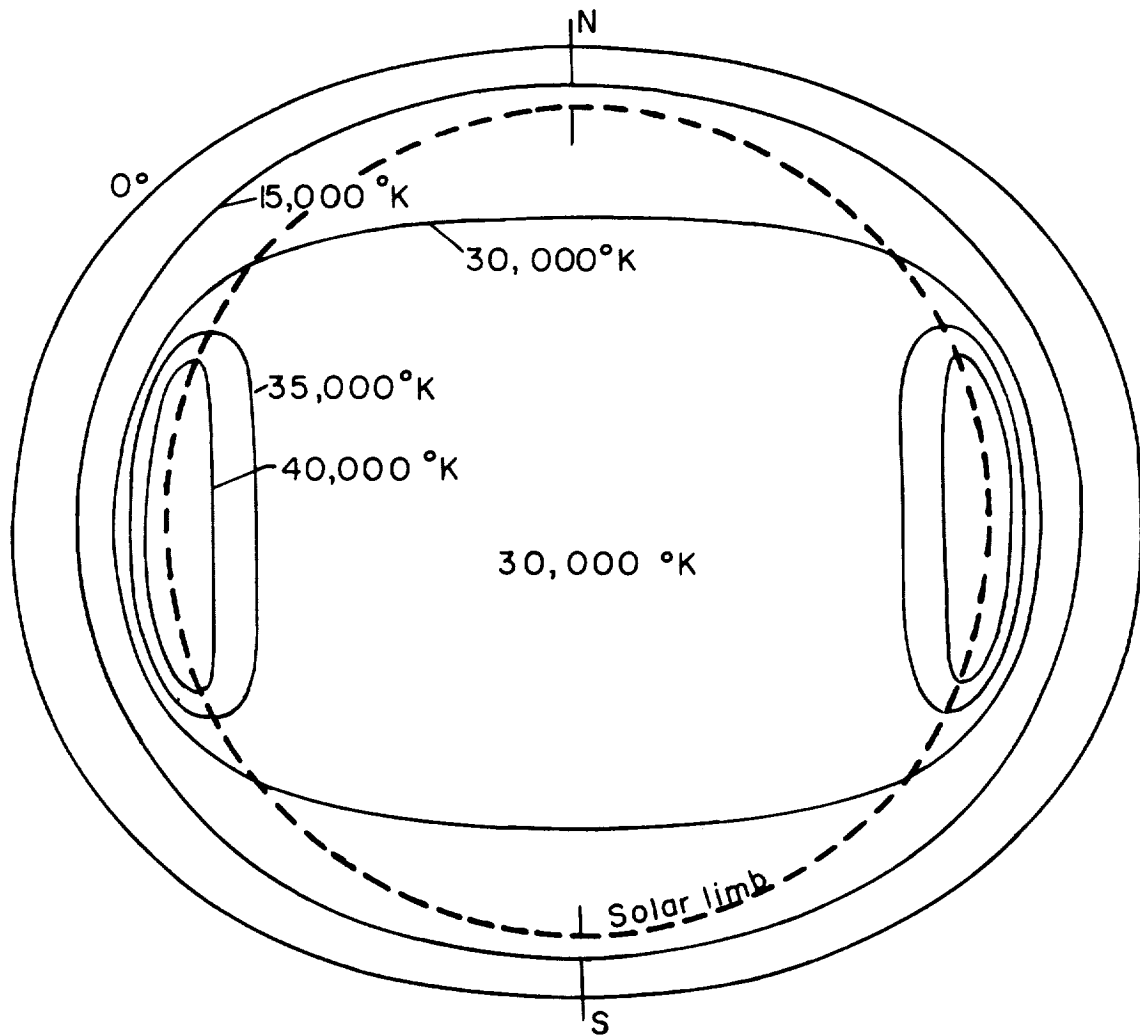
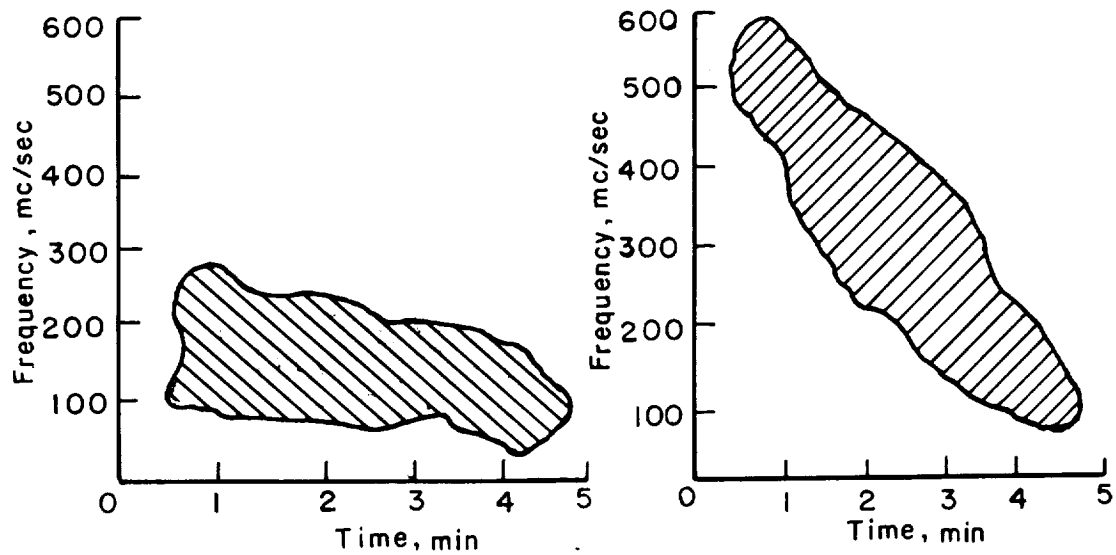
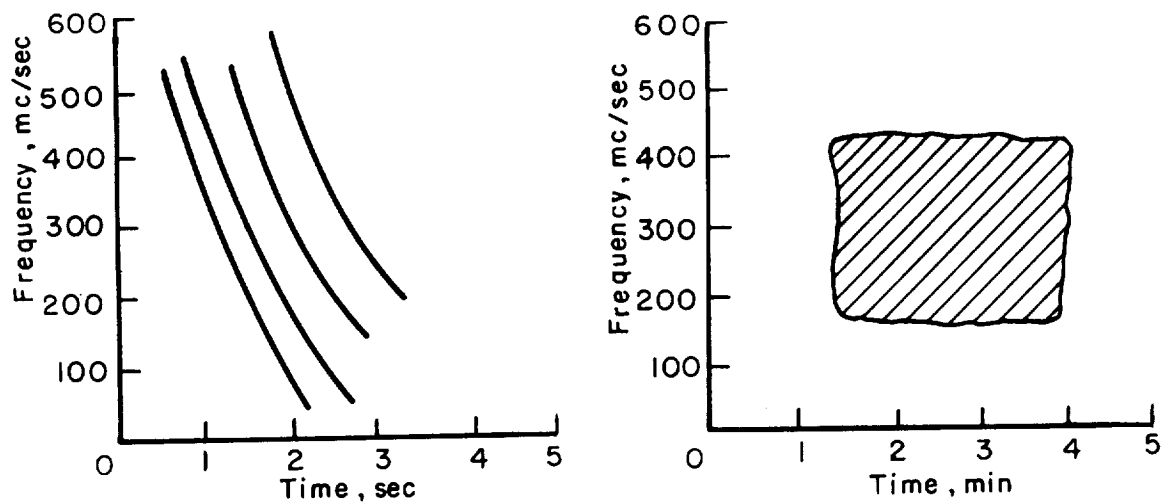


Figure 3.- Brightness-temperature distribution of the Sun at a wavelength of 9.1 centimeters (Swarup, ref. 16).



(a) Noise storm (wide band).

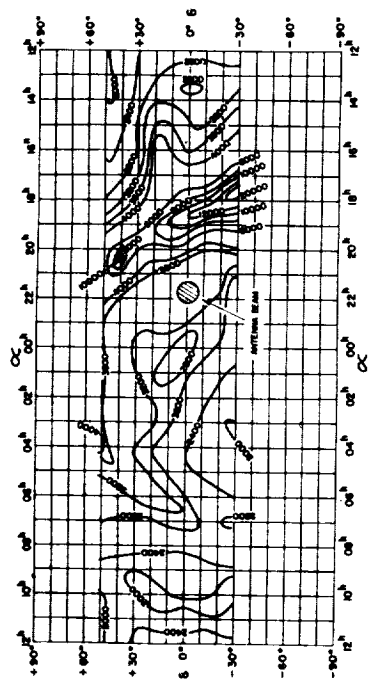
(b) Slow-drift burst.



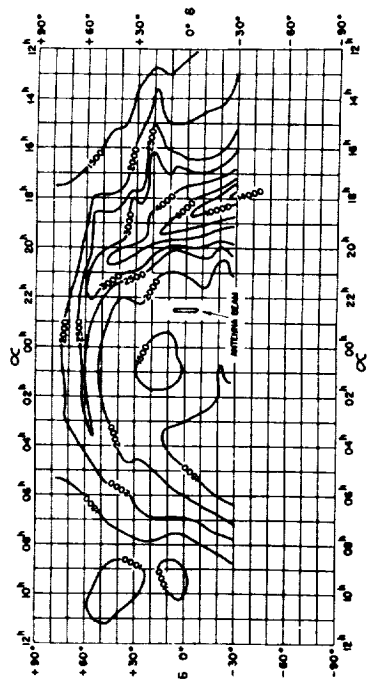
(c) Fast-drift burst.

(d) Enhanced continuum.

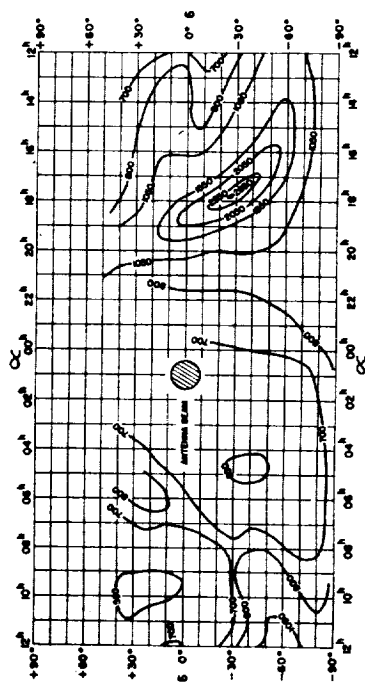
Figure 4.- Dynamic spectra of various types of solar disturbances.



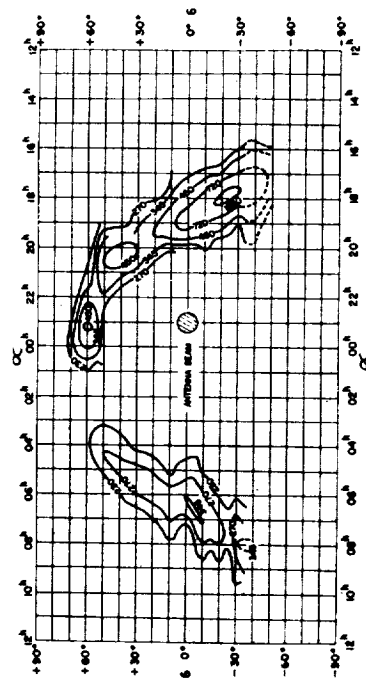
(a) 64 mc/sec. Ko (ref. 39) after Hey, Parsons, and Phillips (ref. 31).



(b) 81 mc/sec. Ko (ref. 39) after Baldwin (ref. 32).

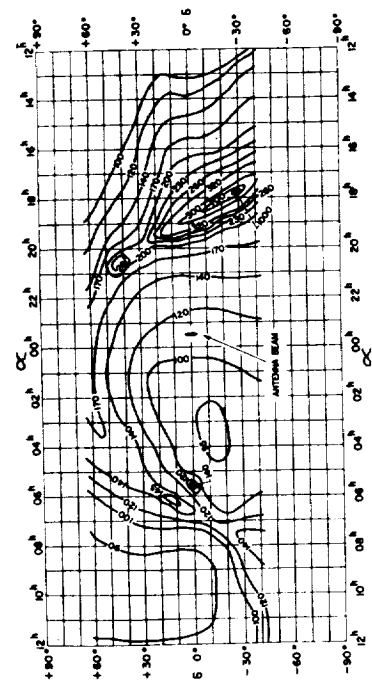


(c) 100 mc/sec. Ko (ref. 39) after Bolton and Westfold (ref. 34).

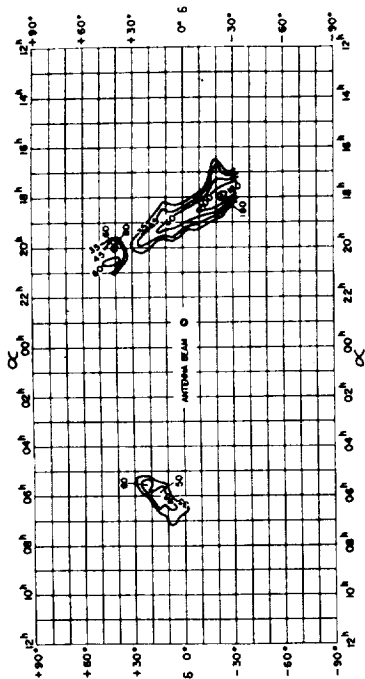


(d) 160 mc/sec. Ko (ref. 39) after Reber (ref. 36).

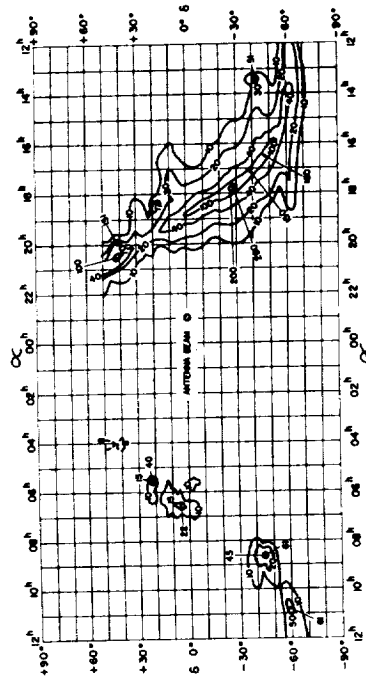
Figure 5.- Distribution of radio brightness temperature. α , right ascension; δ , declination; h, hour.



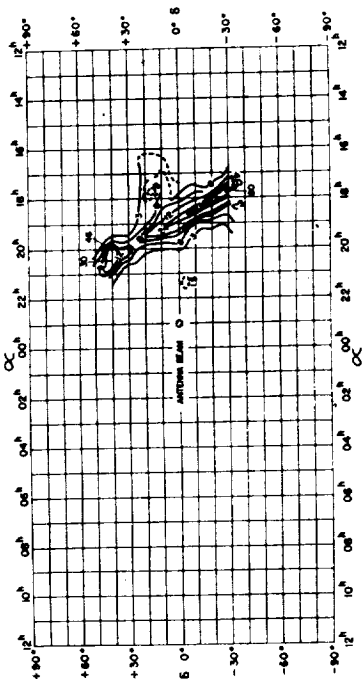
(e) 250 mc/sec. Ko (ref. 39) after
Ko and Kraus (ref. 35).



(f) 480 mc/sec. Ko (ref. 39) after
Reber (ref. 36).



(g) 600 mc/sec. Ko (ref. 39) after
Piddington and Trent (ref. 37).



(h) 910 mc/sec. Ko (ref. 39) after Denise,
Leroux, and Steinberg (ref. 38).

Figure 5.- Concluded.

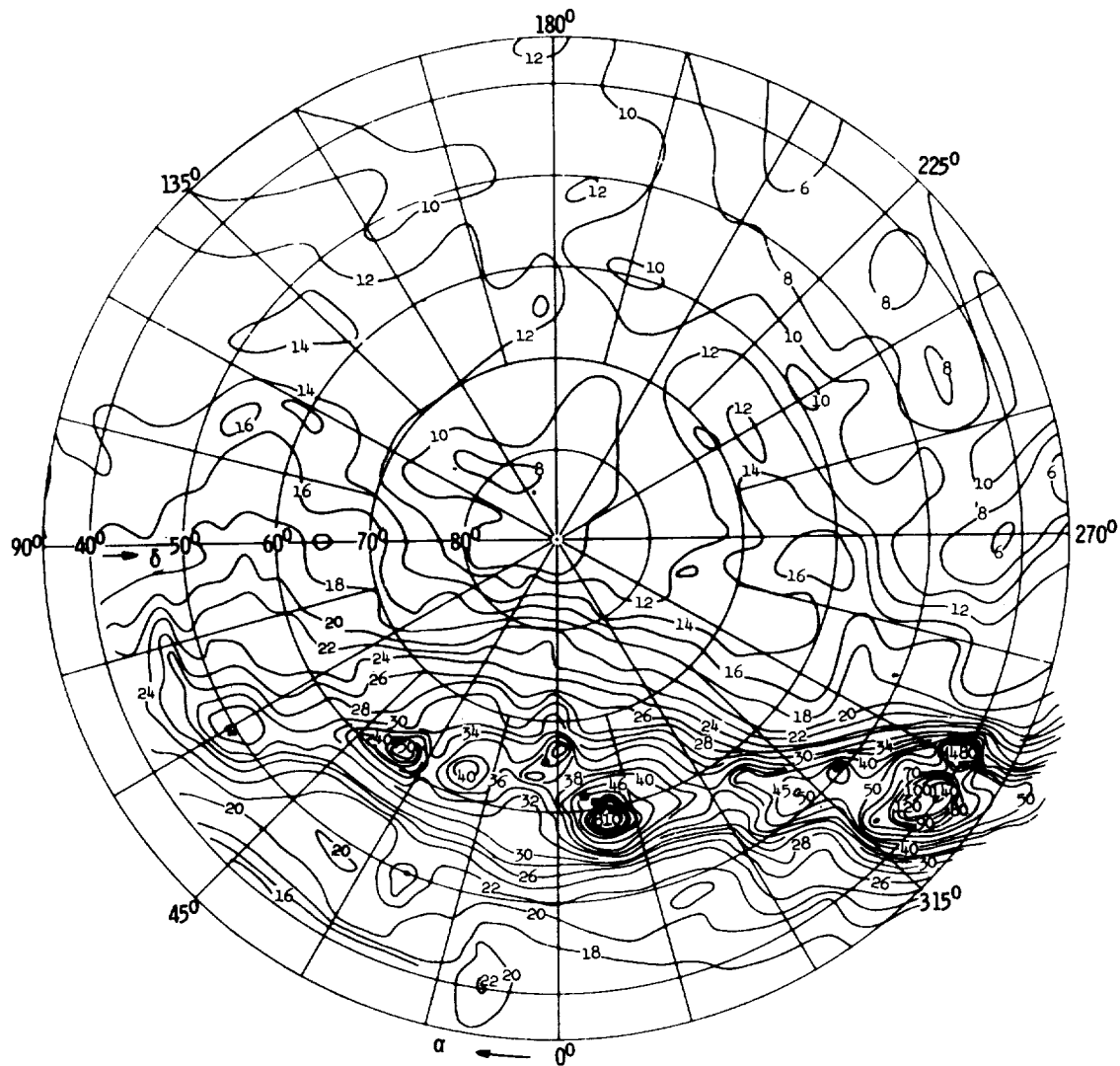


Figure 6.- Distribution of radio brightness temperature for the north polar cap at 400 mc/sec. Units are $^{\circ}\text{K}$. Westerhout (ref. 40).

